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THE

EDINBURGH MEDICAL AND SURGICAL JOURNAL:

EXHIBITING

A CONCISE VIEW

OF THE

LATEST AND MOST IMPORTANT DISCOVERIES

IN

MEDICINE, SURGERY, AND PHARMACY.

VOLUME THIRTY-NINTH.

1833.

EDINBURGH:
PRINTED FOR ADAM AND CHARLES BLACK:
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Communications have been received from Drs Murray, John Scott of Cupar in Fife, Brown, Messrs David Mason, and Henry Smyth.

To Mr H. Smyth, we have merely to reply, that our limits do not permit us to comply with his request.

The following works have been received:

The Anatomy of the Horse, embracing the structure of the Foot. By William Percival, M. R. S. S., Veterinary Surgeon to the First Life Guards, &c. London, 1832. 8vo. Pp. 454.

A Practical Treatise on Cholera, as it has appeared in various parts of the Metropolis. By Alexander Tweedie, M. R. C. S., &c. and Charles Gaselee, M. R. C. S., London, 1832. 8vo. Pp. 79.

Doctrine et Traitement Homoeopathique des Maladies Chroniques, par S. Hahnemann. Traduit de l'Allemand Par A. J. L. Jourdan, Membre de l'Academie Royale de Medecine. Tom. II. Paris et Londres. 8vo. Pp. 468 and 679.

The Nature and Treatment of the Epidemic Cholera. By Robert Venables, A. M. Bachelor of Medicine, and Licentiate of Physic of the University of Oxford, &c. &c. Wick, 1832. 8vo. Pp. 52.

New Theory of the Influence of Variety in Diet on Health and Disease, accounting for many obscure affections, and tending to elucidate the nature and treatment of Epidemic Cholera. By Charles Cameron, Surgeon, R. N. Lond. 1832. 8vo. Pp. 104.

An Essay on the Structure and Functions of the Skin; with Observations on the Agency of Atmospheric Vicissitudes through the Medium of the Skin, in the Production of Affections of the Lungs, Liver, Stomach, Bowels, &c. By William Wood, M. D. Member of the R. C. S. L. and Physician to the Newport Dispensary. Edin. 1832. 8vo. Pp. 172.

A System of Materia Medica and Pharmacy, including Translations of the Edinburgh, London, and Dublin Pharmacopoeias. By John Murray, M. D., Fellow of the R. Coll. of Surgeons, Ed. &c., 1832. 8vo. Pp. 886.

A Brief Outline of the History and Progress of Cholera at Hull, with remarks on the Pathology and Treatment of the Disease. By James Alderson, M. D., late Fellow of Pembroke Coll., Camb., &c. London, 1832. 8vo. Pp. 38.

On the Structure of the Human Placenta, and its connections with the Uterus, &c. By Thomas Radford, Senior Surgeon to the Lying-in Hospital, Manchester. Manchester, 1832. 8vo. Pp. 23.

Elements of Materia Medica and Therapeutics, including the recent Discoveries and Analyses of Medicines. By Anthony Todd Thomson, M. D. F. L. S. Professor of Materia Medica and Therapeutics, and of Medical Jurisprudence, in the University of London, &c. 1832.

The Elements of Anatomy. By Jones Quain, B. M. Professor of Anatomy and Physiology in the University of London. Second Edition. 1832.

Elements of Surgery. By Robert Liston, Fellow of the Royal Colleges of Surgeons in London and Edinburgh, Surgeon to the Royal Infirmary, Lecturer on Surgery, &c. Part Third. 1832.

A Treatise on Inflammations; explaining their Pathology, Causes, Consequences, and Treatment, with their effects on the various Textures of the Body. Being an extension of a Dissertation on Inflammation of the Membranes, to which the Jacksonian Prize, for the year 1828, was awarded by the Royal College of Surgeons in London. By George Rogerson, Surgeon, Liverpool.

Outlines of Physiology and Pathology. By William Pulteney Alison, M. D., F. R. S. E., Fellow of the Royal College of Physicians, and Professor of the Institutes of Medicine in the University of Edinburgh. 1833.

On the Function of Respiration in Health and in Disease, and more especially in Cholera, Typhus, &c. Also, on the Formation of Atmospheric Air. By Richard Saumarez, Esq. Guernsey. 1832.

An Account of the First Meeting of the Provincial Medical and Surgical Association, held in the Board Room of the Worcester Infirmary, on Thursday, July 19, 1832; containing an Address delivered by Charles Hastings, M. D. together with a Report of the Proceedings at the Meeting.

Cholera, as it has recently appeared in the towns of Newcastle and Gateshead; including cases illustrative of its Physiology and Pathology, with a view to the establishment of sound principles of Practice. By T. M. Greenhow, (of Newcastle-upon-Tyne,) Member of the Royal College of Surgeons in London, &c. &c. 1832.

A Treatise on the Diseases of the Liver, and on Bilious Complaints; with Observations on the Management of the Health of those who have returned from Tropical Climates, and on the Diseases of Infancy. By George Hamilton Bell, Fellow of the Royal College of Surgeons, Edinburgh, late Residency Surgeon, Tanjore. 1833.

The Substance of the Official Medical Reports upon the Epidemic called Cholera, which prevailed among the poor at Dantzic between the end of May and the first part of September 1831, as transmitted to their Lordships; being an Analysis of the said Epidemic Disease in that city, founded upon actual observation and accurate inquiry; with important and well-authenticated facts relative to the same disease, as it prevailed among the poor in other parts of the north of Europe. By John Hamett, M. D. 1832.

Cases of Cholera collected at Paris in the mouth of April 1832, in the wards of MM. Andral and Louis, at the Hospital La Pitié. By James Jackson, J. R. 1832.

Tables for the Chemical Analysis of Inorganic Bodies. 1832.

Part 12. The Principles and Practice of Obstetric Medicine, in a series of Systematic Dissertations on Midwifery, and on the Diseases of Women and Children; illustrated by numerous Plates. By David D. Davis, M. D. M. R. S. L. Professor of Midwifery in the University of London and Edinburgh, &c. &c. Part 13. Ditto. Ditto.

Elements of Chemistry. By Edward Turner, M. D. F. R. S. L. and E. &c. London, 1832. 4th Edition.

A Dictionary of Practical Medicine, comprising General Pathology, the Nature and Treatment of Diseases, Morbid Structures, and the Disorders especially incidental to Climates, to the Sex, and to the different Epochs of Life; with numerous Prescriptions for the Medicines recommended; a Classification of Diseases, according to pathological principles; a copious Bibliography, with references; and an Appendix of approved Formulæ: the whole forming a library of pathology and practical medicine, and a digest of medical literature. By James Copland, M. D.

History of the Glasgow Royal Infirmary, from its commencement in 1787 to the present time, with an Appendix, containing the Charter and Laws of the institution, the Tables of Diet, &c. By Moses Steven Buchanan, M. D. 1832.

Medical Gazette from September 22, to December 8.

London Med. and Surg. Journal from September 22, to December 8.

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ERRATA.

Page 85, 12th line from the foot, *for* " draw from the atmospherical air" *read* decompose the atmospherical air.

—— 87, 6th line from the head, *for* " psorax syphilis" *read* psora and syphilis.

—— 90, 8th line from the foot, *for* " powers of miasmatic fever" *read* forms of miasmatic fever.

—— 101, 10th line, *for* " evacuations" *read* emanations.

—— 356, 7th line from the foot, *for* 1833 *read* 1832.

NOTICES TO CORRESPONDENTS.

Communications have been received from Dr **Bush** and Mr **Tait**, Dr **Borthwick Gilchrist**, Mr **Patison**, and Mr **W. Munro**. To the latter gentleman, we beg to say, that his communication came too late to receive attention in the present number; but that we shall lose no time in attending to the subject of it.

The following works have been received:

Traité des Maladies des Enfans nouvéau-nés et a la mamelle, Fondé sur de nouvelles observations cliniques et d'anatomie pathologique, faites a l'hôpital des enfans trouvés de Paris, dans le service de M. Baron; par C. M. Billard, Docteur en Medecine de la Faculté de Paris. Membre de plusieurs Societés Savantes, deuxieme edition, &c. par M. Le Dr Olliver D'Angers. Paris, 1833. 8vo. Pp. 728.

A Practical Account of Epidemic Cholera, and of the Treatment requisite in the various modifications of that disease. By William Twining of the R. C. S. London, &c. London, 1833. 12mo. Pp. 292.

A Treatise on the Urethra; its Diseases, especially Stricture, and their Cure. By Benjamin Phillips. London, 1832. 8vo. Pp. 319.

Observations on some of the most important points connected with the consideration and treatment of Cholera Asphyxia. By James Hutchinson, N. M. M. R. C. S. L. &c. Calcutta, 1832. 8vo. Pp. 206.

Researches on the Pathology and Treatment of some of the most important Diseases of Women. By **Robert Lee**, M. D. F. R. S. &c. London, 1833. 8vo. Pp. 220.

A Further Examination of the Principles of the Treatment of Gout; with Observations on the Use and Abuse of Colchicum. By Sir Charles Scudamore, M. D. F. R. S. &c. &c. The Second Edition. London, 1833. 8vo. Pp. 127.

Outlines of a Course of Lectures on Military Surgery, delivered in the University of Edinburgh. By Sir George Ballingall, M. D. F. R. S. E. Regius Professor of Military Surgery. Edinburgh and London, 1833. 8vo. Pp. 589.

New Views of the Process of Defecation, and their Application to the Pathology and Treatment of Diseases of the Stomach, Bowels, and other Organs; together with an Analytical Correction of Sir Charles Bell's Views respecting the Nerves of the Face. By James O. Beirne, M.D., Surgeon Extraordinary to the King, &c. Dublin, London, and Edinburgh, 1833, 8vo, pp. 286.

Remarks submitted to the Medical Professors of the Universities of Scotland and Ireland, as well as to the Licentiates, on the necessity of Medical Reform, &c. By Machaon. London, pp. 16 8vo.

The Hunterian Oration for 1833. Delivered on the 14th Feb. 1833. By John Howship, Teacher of Surgery, &c. London, 1833, 8vo. pp. 28.

The Principles and Practice of Obstetric Medicine, in a Series of Systematic Dissertations on Midwifery, and on the Diseases of Women and Children. Illustrated by numerous Plates. By David D. Davis, M. D. Part xv. and xvi. London, 1833.

Traité Pratique des Maladies de l'Uterus et de ses Annexes. Par Mad. Veuve Boivin, et M. A. Duges. Atlas 3zieme, and 4trieme livraison. Planches 7, 8, 9, 10, 11 and 1, 17 18, 19, 20. Paris, 1833.

Anatomie Pathologique du Corps Humain, ou Descriptions avec figures, Lithographiées et Coloriées, des diverses alterations morbides, dont le corps humain est susceptible. Par J. Cruveilhier, Professeur d'Anatomie à la Faculte de Medecine de Paris. Troizieme Livraison ; Maladies de l'Uterus. Planches 1, 2, 3, 4, 5, 6. A Paris, chez J. B. Bailliere, 1830.

Bulletin General de Therapeutique Medicale et Chirurgicale, Recueil Pratique, publiè par M. Miguel, D. M. Second année, Tom. III. 7, 8, 9, et 10me, livraison. Paris, October and Novembre, 1832.

The Liverpool Medical Gazette, or Monthly Journal of Medicine, and the Collateral Sciences. No. I. January 1833, and No. II. February 1833. 8vo. Liverpool.

The London Medico-Chirurgical Review, or Journal of Practical Medicine. Edited by James Johnson, M. D. &c. London, No. xxxv. January 1833.

The London Medical Gazette for the Session 1832—1833, No. xv. December 15 to xxix. March 16.

The London Medical and Surgical Journal. No. lxvi. December 15, to No. lviii. March 9, 1833.

The American Journal of the Medical Sciences. No. xix. May 1832, No. xx. August 1832, and No. xxi. November 1832. Philadelphia, Curry and Son, London and Paris.

The Dublin Journal of Medical and Chemical Science, exhibiting a Comprehensive View of the Latest Discoveries in Medicine, Surgery, and the Collateral Sciences. No. vi. January 1833, No. vii. March 1833. Dublin, 1832-3.

THE

EDINBURGH

MEDICAL AND SURGICAL JOURNAL.

1. JANUARY 1833.

PART I.

ORIGINAL COMMUNICATIONS.

Art. I.—*Statistical and Tabular Returns of the Diseases observed during three years on the Coast of North America, and at Bermuda in the West Indies.* By William Donelly, M. D. of his Majesty's Ship Hussar.

THE volumes of the Edinburgh Medical and Surgical Journal contain numerous statistical communications regarding the diseases most prevalent in particular quarters of the globe; and it has been generally admitted that returns of this description are extremely useful in illustrating the influence of climate, weather, and other physical causes on the health of mankind, and on the origin of disease.

With the view of contributing some information of this nature, I transmit for the readers of that publication returns of the diseases observed and treated by me during a period of three years' duration on the coast of North America, and at Bermuda in the West Indies. The former station is remarkable for the severity of the cold; the latter is equally distinguished by the intensity of the atmospheric temperature; and, with the view of communicating some idea of the nature of the climate in both, I subjoin tables of the meteorological fluctuations observed during the different months of the year.

A Nosological Return of the Sick and Wounded of his Majesty's ship Hussar, from March 1827 to July 1830.

Diseases.	Put on the sick list.	Discharged cured.	Sent to Hosp.	Invalided.
Febris tertiana.	11	11		
quotidiana,	9	9		
remittens,	1	1		
synochus,	5	4	1	
ephemera,	84	84		
Colluvies gastrica,	34	34		
Phlogosis,	248	242	6	
Ophthalmia,	27	23	1	3
Otitis,	2	2		
Cynanche,	89	89		
Pneumonia,*	14	11	3	
Hepatitis,	12	9	2	1
Rheumatismus,	113	109	3	1
Odontalgia,	5	5		
Otalgia,	3	3		
Podagra,	6	4	1	1
Arthrodynia,	8	4	2	2
Variola,†	1		1	
Rubeola,	13	13		
Erysipelas,	4	2	2	
Vaccinia,	4	4		
Urticaria,	3	3		
Hæmoptysis,	1		1	
Phthisis incipiens,	2		1	1
confirmata,‡	1			
Hæmorrhois,	8	8		
Catarrhus,§	138	135	2	
Dolor pectoris,	1	1		
Dysenteria,	1	1		
Asphyxia,‖	1			
Paralysis,¶	1		1	
Dyspepsia,	8	4	2	2
Vertigo,	6	6		
Infirmitas generalis,	4	2		2
Hypochondriasis,	1			1
Cephalalgia,	52	52		
Epilepsia,	9	7		2
Palpitatio,	4	2		2
Carry over,				
Brought over,				
Asthma,**	2		2	
Dyspnœa,	1			1
Colica,	6	6		
Cholera,	16	16		
Diarrhœa,	80	79	1	
Tormina,	6	6		
Delirium tremens,	1	1		
Anasarca,	1	1		
Hydrocele,	1		1	
Syphilis,	55	51	4	
Icterus,	2	2		
Tinea, ptyriasis et lepra,	3	2	1	
Dysecœa,	2	1		1
Contractura,	2			2
Gonorrhœa,	7	7		
Fistula et strictura,	1	1		
Strictura,	1	1		
Obstipatio,	7	7		
Ischuria,	2	2		
Dysuria,	5	5		
Varix,	1	1		
Apostema,	1	1		
Scirrhus,	1	1		
Verruca,	3	3		
Tumor ossis,	1			1
Hernia,	2	1		1
Luxata,	4	2	1	1
Vulnus,	152	146	4	2
Ulcus,††	71	68	1	1
Herpes,	2	2		
Scabies,	9	9		
Fractura,	7	5	2	
Contusio,	186	183	3	
Ustura,	6	6		
Rigiditas digitor.	2			2
Other complaints,	1	1		
Total,	1584	1501	49	30

---

* Died at hospital, 1. † Ibid.
‡ Landed, or left behind on sailing, 1. § Ibid.
‖ Died on board, 1. ¶ Died at hospital, 1. ** Ibid.
†† Landed, or left behind on sailing, 1.

Summary of Registers of Weather, Temperature, &c. kept at Halifax, Nova Scotia.

1826-27-28 and 29.	Weather. Number of days.				Thermom.			Therm. diurnal variations.			Barometer.		
	Fine.	Cloudy or foggy.	Rain or snow.	Variable.	Maximum.	Medium.	Minimum.	Greatest.	Mean.	Least.	Maximum.	Medium.	Minimum.
January,	13	7	10	1	46	23	-3	29¼	12	2	30.36	29.73	29.11
February,	14¼	8	5	0¾	42½	23½	-3¼	26	12¼	4½	36	46	28.98
March,	15½	8¼	6¼	1	50	31¼	1¾	21	11½	3¼	53	54½	29.6
April,	14	8	7	1	58½	39¾	22	22	12½	4	22	60	29½
May,	16¾	7¼	5	2	78½	51¼	31	35	18	4⅓	28¼	75½	18
June,	17½	5½	7		79¾	49½	37¾	30	18	6	22½	92	56
July,	18	6¼	5¼	1½	82¾	65	39	28¾	19	6	24	83	44½
August,	19	4¾	5¼	2	80½	64¼	47½	34¼	16	4½	37	88½	39
September,	17	4¾	7¼	1	75¼	58	37¾	26	15	5	40¾	85¾	53½
October,	18	6½	5½	1	67	47½	27¼	26½	15¼	5¾	52¼	98	59
November.	9¼	13¼	5¼	2¼	58½	38	18	24¾	11¼	3¼	46	76½	12
December,	14½	7¾	7¾	1	48¼	27	3¼	26½	10½	2¾	31½	78	22
Ann. & Tot.	186¾	87¼	76½	14½	55½	43½	18¼	27½	14¼	4¼	30.35¾	29.75⅚	29.29

Winds.	E.	W.	N.	S.	NE	NW	S. E.	S. W.	Var.
January,	1	6⅓	7	3	3⅓	4⅓	2	2⅔	1⅓
February,	1½	5¾	5¾	3	2	6	0¾	3	0¼
March,	3¼	4½	6	3½	2¼	5½	2½	2½	1
April,	3	5¾	3½	3	2	5½	2¼	4	1
May,	1¾	4¾	1½	4½	1	5¼	4¾	6¼	1¼
June,	2	7½	1½	3¾	0¼	5½	2½	5¾	1¼
July,	0¼	6	1	6	0½	4½	2	9½	1¼
August,	1	7¾	2	2¾	1¼	5¾	2½	7¼	0¾
September,	1	6½	3¾	2½	2¼	6¼	1½	6	0¼
October,	1¼	5¼	3½	2½	1½	6½	2¾	6¼	1½
November,	0¾	4¾	2¾	1	1¾	8	3¾	5½	2¼
December,	0½	3¾	7	3½	2¾	7	2	3	1½
Total,	17¼	68½	45¼	39	20¼	70	29¼	62	13½

Summary of Registers of the Weather, Temperature, &c. kept at Bermuda.

	Weather.		Thermometer.			Diurnal range.			Barometer.		
	Dry.	Wet.	Max	Med.	Min.	Great	Mean	Least	Max	Med.	Min.
Jan.	21	10	72°	6°5¾	55°	8	4	1½	30°.39	30° .9½	29°.80
Feb.	21	7	71	64⅘	53	10	5⅔	1	24	7	90
Mar.	22½	8½	72	65	54	9¾	4⅓	1½	35	29.85½	36
Apr.	22⅓	7⅔	71	64¾	56½	10	5½	1½	28	89	50
May	23	8	75	70	57	11	6¼	2	28	6½	85
June	23	7	86	79	68	10	7	3	28	8½	89
July	21	10	89	83½	75	12	7½	2	26	13½	30.00
Aug	20	11	89½	83	75	12	8	1	22	1	29.80
Sep.	18	12	87	82½	74	9	6	4	22	93½	65
Oct.	14	17	86⅓	76¼	65	10	4 4/3	1	13	61	9
Nov.	14	16	82	76½	64	7	4	0½	10	91	72
Dec.	20	11	76	59⅓	56	8	4½	0½	15	77½	40
Tot.	240	125	89½	73⅓	53	12	5⅔	0½	30.39	29 50	29.9

Winds	E.	W.	N.	S.	N. E.	N. W.	S. E.	S. W	Calm.	Variable.
Jan.		2	2	3	6	10	1	4	2	1
Feb.		3	2	2	2	14	1	2		2
Mar.	3	4	1	5	7	1½	7	1½		1
Apr.	3	2	4	5	7	5	2	2		
May		½	4½	8½		1	8	6½		2
Nov.	2	2		3	6	7	6	3		1
Dec.	2	1	3	2	15	2	3	2		1
Tot.	10	14½	16½	28½	43	40½	28	21	2	8

In each of my former journals for the Hussar, I have given an annual return of the sick, a similar statement of the weather, temperature, &c. where we had served. I now give a general return for the whole time from my joining the Hussar in March 1827, to her being paid off in July 1830, with tables of weather and temperature of the two principal points of the station, the one, Bermuda, for many months of the year at least, a place of extreme heat, and the other, Halifax, of an equal extreme of cold. These tables were compiled for Halifax from the registers kept at the garrison library, for the four years 1826–27–28, and 29, the correctness of which I always verified, when at Halifax, by my own observation, and for Bermuda, from my own register, during the months of the year I was annually there, from Mr Johnston's, (which I knew to be correctly kept,) for months that he was there, in the Champion, when I was absent, and the remainder from the mean of five years' registers of the military hospital at St George's.

Having these tables and returns, it occurred to me that they might be turned to some account in ascertaining the influence of climate,—here certainly at extremes,—on disease. To this subject I was induced to turn my attention from perceiving how unsettled and discordant were medical opinions, especially regarding pulmonary diseases;—hearing one physician speak favourably of Bermuda in such cases; whilst another sent them to England, as a more suitable climate; and a third recommended Barbadoes; whilst the practitioners there held the climate of Barbadoes as most fatal.

Of the three years and four months' service in the Hussar, two years were spent on the coast of North America, one at Bermuda, and three months only in England; and of the whole number, 1584, put on the list, 950 were at Halifax, 430 at Bermuda, and 204 in England. Thus giving a proportion nearly double the number for England as for Bermuda, and upwards of a half more than at Halifax. Much allowance, however, is to be made for the circumstances of a ship on first fitting

out, for the half-starved condition, and consequently imperfect health, of part of the crew.

With regard to pulmonary and catarrhal diseases, of 89 cases of *cynanche*, and 138 of catarrh admitted, 153 were on the coast of North America, 57 at Bermuda, and 17 in England. Here the proportion is a third more for Halifax than for Bermuda; yet the worst and most protracted cases of catarrh occurred at Bermuda, and the only two sent to the hospital were there.

Of fourteen cases of *pneumonia*, six occurred at Halifax, where one was sent to the hospital, and there terminated fatally in hepatization and infiltration of the lungs, notwithstanding the most persevering employment of bleeding; three at Bermuda, where two of them were sent to the hospital, and returned cured; and five in England, one of which evinced marked symptoms of being followed by phthisis, when he was sent to Woolwich Infirmary. To these may be added for England, the case of a woman, not included in the returns, which terminated fatally in *hydrothorax* in the poor-house at Deptford.

In the instance of *pneumonia*, then, whilst the proportion between Halifax and Bermuda holds, the cases in England, instead of being an eighth, are equal to the whole that occurred at Halifax.

The single case of *haemoptysis* occurred at Bermuda from a hurt. It had every appearance of being followed by *phthisis*, when the patient was invalided at the hospital, and sent to England.

Of the two cases of incipient *phthisis*, one was a sequel of pneumonia in England, and the other a chronic disease, combined with asthma, contracted before joining the Hussar.

The patient with confirmed *phthisis* was a passenger, a native of Nova Scotia, twenty-three years of age, who went in the Hussar in October 1829 to Barbadoes, where, the day after his arrival, the usual symptoms of advanced *phthisis*, previously by no means urgent, became so alarming that there was every reason to fear a fatal termination in a few days. He, however, rallied; the expectoration, hectic, and colliquative sweats abated; and, by removal to the country, and subsequently to the neighbouring islands, he so far recovered, that four months afterwards he was able to return to Bermuda, where I there saw him, about as well as before he left Halifax.* A sister of this passenger, having also diseased lungs (not advanced *phthisis*) went to Barbadoes about the same time; and a few days after her arrival there died suddenly, in the night, suffocated by profuse hæmoptysis. The mother of this lady had died of *phthisis* in Nova Scotia a few months before.

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* This gentleman returned to Nova Scotia in June 1830, and died there in January 1831.

Of the two cases of asthma, one developed itself very soon after our arrival at Halifax from England; but, being complicated with palpitation and disease of the heart, morbid action must have been going on before. In the second case, still more must this have been so before it openly manifested itself at Halifax, and returned with greater violence about two months afterwards at Bermuda, where it terminated fatally in the hospital; and in which examination showed dilatation and atrophy of both ventricles, thickening and cartilaginous degeneration of the aortic valves, and diminution of the calibre of the aorta to one-half, from a thickened tuberculated state of the coats, and partly cartilaginous and partly bony depositions.

Such are the principal pulmonary diseases that occurred. With regard to rheumatism, 113 cases, both acute and chronic, 67 were at Halifax, 31 at Bermuda, and 15 in England; the latter, instead of an eighth, bearing nearly the proportion of a fourth to those at Halifax and Bermuda.

I shall not go on to state the comparisons in other diseases, as I know the materials furnished by a single ship, or even by the whole of the small squadron now employed on the station, are not sufficient to furnish grounds for any conclusion. Having had access, however, to the books of the Halifax and Bermuda Naval Hospitals, I undertook to make out quarterly returns from them, from the quarterly annual, and from the annual the general returns that are attached to this journal.

TABULAR VIEW of Diseases in the Naval Hospital at Halifax, N. S., from 1809 to 1819.

	Pneumonia.				Hæmoptys.				Phthisis.				Catarrhus.				Asthma.			
	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.
1809,	13	10	1		4	2	2		12	4	6	2	3	1	2		5	2	2	1
1810,	19	14	5	1	1		1		29	3	17	18					6		6	
1811,	14	7	5	2	4	1	2	1	15	2	8	3	1	2			6	2	4	
1812,	18	16			3	1	1	1	21	4	15	2	2	2			2	2		
1813,	64	38	16	5	6	1	5		75	8	52	15	5	2	1	2	7	1	6	
1814,	45	24	15	6	7	5	2		85	8	58	19	10	5	5					
1815,	31	16	10	5	2		2		20	6	12	2	9	7	2		2		2	
1816,	10	7	2		2	1		1	3			2	3	3			1	1		
1817,	7	6	1		1	1			1		2									
1818,	7	3	2	1	2		1	1	5	1	3	1	1	1			1	1		
1819,	4	4											2	2			1			1
Total	232	145	57	20	32	12	16	4	266	36	173	54	36	25	10	2	31	9	20	2

	Dyspnœa.				Tussis.				Pect. affect.				Syphilis.				Ulcus.			
	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.
1809,					9	5	4						53	37	3	1	30	16	11	1
1810,					5	4	1		2			2	13	10	2		29	20	11	1
1811,					3	2	1		1			1	14	13			16	12	2	
1812,									2	2			28	22	4		38	27	6	
1813,					2		2		8	2	6		52	28	24		162	92	67	1
1814,					2	1	1		7	4	1	2	31	23	9	1	87	23	66	1
1815,					3	2	1						14	14	1		19	10	8	1
1816,					1	1							11	9	2		7	6	3	
1817,									1				10	5	5		3		2	
1818,									3	2	1	1	9	7	2					
1819,									1	1			4	1	3					
Total.					25	15	10		25	11	8	6	239	169	55	2	391	206	176	5

	Interm. fev.				Contin. fever.				Phlogosis.				Hepatitis.				Rheumatismus.			
1809,	4	4			52	40	4	7	10	9	1		5	4		1	38	26	7	1
1810,	4	4			29	23	5	2	9	7	1		5		5		55	31	21	
1811,					30	20	2	7	12	10	1		5	4	1		27	12	16	
1812,	1			1	22	19	1	3	6	6	1		5	3	2		35	24	10	2
1813,	15	10	5		214	194	14	6	14	6	6		22	8	12	2	89	34	53	
1814,	1			1	52	29	16	5	15	6	9		25	5	19	1	67	22	42	3
1815,	2	2			34	25	6	3	1		1		9	1	8		22	8	13	1
1816,	1	1			8	6		1	1		1						8	7	2	
1817,					12	9	3		2	2			1			1	16	6	10	
1818,					5	4		1	1	1			13	8	5		15	7	7	
1819,					1	1			2	2			5	2	3		3	3		
Total.	28	21	5	2	459	370	51	35	73	49	21		95	35	55	5	373	180	181	7

	Dysenteria.				Diarrhœa.				Col. et Chol.				Dyspepsia.				Other complaints.			
1809,	28	16	3	5	3	1	1	1	3	3			2	1	1		142	90	31	17
1810,	23	19	2	2									2	1	1		161	67	69	25
1811,	6	3	2		5	2	1	1	6	5		1	6	5	1		123	66	43	13
1812,	17	12	2	3	4	4			2	2			4		4		174	71	70	13
1813,	35	5	28	2	16	3	13		3	2	1		3	1	2		542	162	327	47
1814,	47	15	24	6	7	2	5						5	3	2		398	137	237	35
1815,	19	6	9	4	3	2	1		5	5			1	1			104	41	56	7
1816,	2			2	2		2										39	11	10	8
1817,	1		1		3	1	1						2	1	1		54	29	24	4
1818,	1	1			2	2	1		1	1							40	17	19	3
1819.									1	1							17	18	1	1
Total,	179	77	71	26	45	17	25	2	21	19	1	1	25	13	12		1794	709	887	173

Total number admitted of all diseases, 4369; total cured of all diseases, 2118; total invalided, 1834; total died, 341. Others ran, or were sent to harbour duty. The deaths from phthisis are between a fifth and a sixth of the whole.

TABULAR VIEW of Diseases in the Naval Hospital at Bermuda for fourteen years.

	Pneumonia.				Hæmoptysis.				Phthisis.				Catarrhus.				Asthma.			
	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.
1812.	18	14	2	2	4	2	2		38	8	10	13	2	1	1		3	2		1
1813.																				
1814.	12	8	3	1	3	3			45	11	15	20	9	8		1	4	1	2	1
1815.	15	7	3	4	2		2		13	2	7	4	2	1	1		2		2	
1819.	4	2	2		1			1	5	3		2								
1820,	6	4	1	1					2		2									
1821.	4	3		1	1	1			1		1		1	1						
1822,	5	4	1		1	1			2	1		1								
1823,	4	4							8	1	1	1	1	1						
1824.	15	14							6	2	2	2	30	27	1	1	1	1		
1825.	8	7	1		1	1			4	2	1	5	7	5	1					
1826	9	6	1						10	1	3	7	17	17			3	2		
1827	19	16							17	7	4	6	21	21			1	1		
1828.	24	19	1	4	2	1	1		7	2	1	3	14	12	2		3	2		1
1829.	15	14	1		2	1		1	21	4	3	14	29	29			1	1		
Total	158	125	16	13	17	10	5	2	169	44	50	78	133	123	6	2	18	10	4	3

	Dyspnœa.				Tussis.				Pectoral affect.				Syphilis.				Ulcus.			
1812					5	4		1					25	20	4	2	60	49	8	3
1813,																				
1814,	1		1		5	2	3						18	15	3		90	59	29	1
1815,					1	1							10	5	4		40	10	18	1
1819,									2	2			8	7	1		9	8	1	
1820.													5	4			3	3		
1821,									1	1			3	4			5	4	1	
1822,									1				4	3			4	4		
1823,									2	2			8	7	2		3	2	1	
1824,													13	13			33	32		
1825,													5	5			29	27	2	
1826,					1	1							3	3			32	31		
1827,									2	1			9	9			10	11		
1828,	2	1	1								1		16	16			21	20		
1829,					2	2							8	7		1	27	23	3	1
Total	3	1	2		14	10	3	1	8	6	1		135	118	14	3	366	283	63	6

	Intermit. fever.				Contin. fever.				Phlogosis.				Hepatitis.				Rheumatismus.			
1812	2	2			134	102		32	7	6			2	2			26	24		
1813'																				
1814,	4	4			55	32	6	12	11	9	1		11	7	4		29	25	5	
1815,	2	2			63	50	3	10	2		2		5	3	2		20	10	9	
1819,	1	1			107	82		25	9	9			4	2	2		6	3	3	
1820,					13	13			8	6	1		4	2	1		6	6		
1821,	1	1			28	27	1		5	3			6	4	1		3	2	1	1
1822,					4	4			1	1			8	3	4		7	4	3	
1823,	1	1			14	14			1	1			4	3	1	1	3	2	1	
1824,	6	6			9	9			13	13			11	8	2		22	21	1	
1825.					22	21		1	10	10			9	4	4	1	20	17	2	
1826					21	16	1	4	20	18	1	1	3	2	1		10	9	1	
1827,					8	7	1		8	8			3	1	2		24	20	3	
1828,					14	11	1	2	27	27			6	4	1	1	72	71	2	
1829,	3		2	1	60	48		12	15	14		1	7	5	1	1	37	33	2	1
Total	20	17	2	1	552	436	13	98	137	125	5	2	83	50	26	4	285	247	33	2

	Dysenteria.				Diarrhœa.				Cholera & colica.				Dyspepsia.				Other complaints.			
	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided	Died.
1812, 1813,	29	23			9	6		1	1	1			4	3	1		198	146	28	28
1814,	102	53	29	21	5	4		1					2		1	1	111	92	24	15
1815,	39	10	21	7	1		1						3		3		87	58	19	11
1819,	12	12							3	2		1					44	31	1	7
1820,	7	7							13	13			6	6			51	43	9	1
1821,	6	6			2	1			2	2			3	3			56	51	6	1
1822,	2	2			1	1	1		5	5			4	4			46	32	13	4
1823,	1	1			1	1			1	1			2	2			58	52	4	3
1824.	17	16			70	70			10	10			3	3			125	119	1	4
1825,	19	18			60	59	1		16	16			4	3		1	137	131	2	1
1826,	66	62		5	59	59			6	6			4	4			137	125	4	15
1827,	49	45		4	63	63			5	5			6	6			106	100	1	4
1828,	21	17		3	49	46	1	2	20	19		1	9	8		1	144	128	11	14
1829,	33	25		8	40	111	1	28	30	27	3		11	10	1		173	150	13	12
Total,	403	297	50	49	460	421	5	32	112	107	3	2	61	52	6	3	1473	1258	136	120

Total admitted of all diseases, 4607; total discharged cured, 3743; total invalided, 443; total died, 421. Others ran, or were sent to harbour duty. The deaths from phthisis were between a sixth and seventh of the whole; but, excluding 79 corpses received for interment from the total amount of deaths, those from phthisis are more than a fifth of the whole, and consequently more in proportion than at Halifax.

These tables include fourteen years of Bermuda, and eleven of Halifax, hospital; and though there are three years more for the former than for the latter, the number of patients admitted into each is nearly the same, being in the first 4607, and in the latter 4369. It seemed to me that I had fallen into an error, when I found, that though there were only 218 less treated at Halifax, no more than 2118 were discharged cured; whilst at Bermuda, 3743, or above two-thirds more, were cured. Re-examination of the returns, however, only showed the correctness of these numbers.

The greatest excess in the Halifax returns is under the head of invaliding; and this obtains proportionately in all the diseases given in the general, and, indeed, in the quarterly, returns; but it is particularly the case in *phthisis*, *syphilis*, *rheumatismus*, and, above all, in *ulcus* and *vulnus*. It is to be remembered, that the number of badly wounded received into Halifax hospital is greater than that into Bermuda; that such cases would offer more subjects for invaliding; and that, with regard to the military on Ireland Island (Bermuda,) who for five years have been received into the Naval Hospital there, when objects for invaliding, they are sent to the head quarters at St George's. With regard to ulcus, whilst about a sixth of those treated at Bermuda are invalided, nearly half is the proportion at Halifax. The deaths at Bermuda are nearly one in eleven, and at Halifax one in ten.

At Bermuda, phthisis is between a twenty-seventh and twenty-eighth of the whole; pneumonia a twenty-ninth; and all pulmonary diseases between an eighth and ninth; whilst at Halifax, phthisis is between a sixteenth and seventeenth of the whole; pneumonia between an eighteenth and nineteenth; and all pulmonary diseases between a sixth and a seventh.

Intermittent fevers are not known as indigenous, either at Halifax or Bermuda, so that the few cases in the returns must have been of foreign origin. The small proportional excess of continued fevers at Bermuda is hardly so much as might have been expected from the climate, and the occurrence also of an extensively prevailing fever during some of the years of the return.

It would not, *a priori*, have been expected that the number of cases of hepatitis should exceed considerably at Halifax that at Bermuda, and that much fewer should be cured, and many more invalided, at the former than at the latter place. Such, however, appears on the face of the returns to have been the case.

Rheumatism at Halifax hospital bears the proportion of more than a twelfth to the whole, and of these less than a half are cured; whereas at Bermuda rheumatism does not bear the proportion of a sixteenth, of which the greater part are cured, about a ninth invalided, and one in 142 dies. Yet the popular and medico-popular opinion, at least in the naval service, is, that Bermuda is a rheumatic climate.

Dysentery and diarrhœa are in number four times as many at Bermuda as at Halifax; but at the former place seven-eighths are cured, and at the latter less than a half, whilst nearer a half are invalided. At Bermuda, the deaths in these diseases are one in ten; at Halifax, one in eleven. At Bermuda, cholera and colic are about equal to a thirty-third of the whole; and at Halifax only a two hundred and eighth part. Dyspepsia at the former place is a seventy-sixth, and at the latter a hundred and seventy-second part. That dyspepsia is a very prevalent complaint, not only in the summer but also in the winter months, at Bermuda, I am well satisfied; and in the islanders, more especially the young, the existence of worms is a very general complication.

As in considering climate pulmonary diseases claim the first attention,—not fully satisfied with what might be deduced from the general return of pneumonia, phthisis, and hæmoptysis,—I made out special tables of a number of each disease, showing the proportion cured, invalided, and dead, in both hospitals, giving also the average, greatest, and least number of days at the hospital before each result. A copy of all of these, with a similar table of rheumatism, I affix to this journal.

TABULAR VIEW of the results in 216 cases of Pneumonia at Halifax Naval Hospital.

	Tot. admitted	Cured.	After an average of days.	After greatest No. of days.	In the least No. of days.	Invalided.	After an average of days	After greatest No. of days.	After the least No. of days.	Dead.	After an average of days.	After greatest No. of days.	After the least No. of days.
1809,	6	5	36	73	14	1	102	102	102				
1810,	21	15	45	116	9	4	114	237	20	2	12	9	3
1811,	13	16	31	58	15	5	39	53	21	2	$44\frac{1}{2}$	87	2
1812,	16	15	$28\frac{2}{3}$	62	6	1	13	13	13				
1813,	57	36	28	111	2	15	24	120	1	6	10	33	2
1814,	43	22	$32\frac{1}{2}$	109	4	15	35	115	1	6	7	21	1
1815,	31	16	$24\frac{1}{2}$	69	5	10	26	69	5	5	32	120	2
1816,	9	7	38	89	6	2	$4\frac{1}{2}$	8	1				
1817,	9	7	$30\frac{1}{2}$	49	9	2	134	210	58				
1818,	7	3	$69\frac{1}{3}$	155	20	3	$27\frac{1}{3}$	60	8	1			
1819,	4	4	$35\frac{1}{4}$	96	3								
Total,	216	136	36	155	2	58	52	237	1	22	21	120	
Prop. of whole,	$\frac{17}{27}$					$\frac{1}{4}$				$\frac{1}{10}$			

TABULAR VIEW of the results in 144 cases of Pneumonia at Bermuda Naval Hospital.

1812, 1813,	8	5	$33\frac{1}{2}$	50	11	1	55	55	55	2	7	11	3
1814,	12	6	33	49	9	5	34	41	12	1	8	8	8
1815,	15	9	31	63	12	3	11	15	5	3	26	33	22
1819,	4	2	27	51	3	2	30	56	5				
1820,	5	3	35	85	6	1	39	39	39	1	12	12	12
1821,	4	3	14	31	4					1	5	5	5
1822,	3	3	7	8	4								
1823,	4	4	16	28	6								
1824,	16	16	14	27	4								
1825,	8	7	$30\frac{1}{3}$	59	8	1	22	22	22				
1826,	10	9	$27\frac{1}{3}$	48	8	1	99	99	99				
1827,	18	15	$54\frac{1}{2}$	288	5					3	33	58	13
1828,	23	18	21	67	5	1	100	100	100	4	$30\frac{1}{2}$	41	12
1829,	14	13	$20\frac{1}{2}$	100	2					1	12	12	12
Total,	144	113	$27\frac{1}{2}$	288	2	15	49	100	5	16	$16\frac{3}{4}$	58	3
Prop. of whole,	$\frac{7}{9}$					between $\frac{1}{9}$ & $\frac{1}{10}$				$\frac{1}{9}$			

TABULAR VIEW of the results in 265 cases of Phthisis at Halifax Naval Hospital.

	Tot. admited	Cured.	After an average of days.	After greatest No. of days.	After the least No. of days.	Invalided.	After an average of days.	After greatest No. of days.	After the least No. of days.	Dead.	After an average of days.	After greatest No of days.	After the least No. of days.
1809,	12	4	45½	92	18	6	28½	90	8	2	13	14	12
1810,	29	4	36	70	17	17	35	117	3	8	38½	126	3
1811,*	14	1	51	51	51	8	9	15	2	4	14	18	7
1812,	23	4	36	57	16	17	37½	130	6	2	5	8	2
1813,	79	8	37	90	4	54	14	66		17	20	89	2
1814,	83	9	41⅓	125	9	56	11	50		18	22	83	3
1815,	16	6	23	35	8	8	14	30	5	2	23	30	16
1816,	2									2	½	1	
1817,	5					5	55	188	6				
1818,	2									2	43½	82	5
1819,													
Total,	265	36	38½	125	4	171	25½	188		57	20	126	
Prop. of whole about		1/7				2/3				between ¼&⅕			

TABULAR VIEW of the results in 170 cases of Phthisis at Bermuda Naval Hospital.

1812,	51	1	31	31	31	2	68	100	37	2	23½	46	1
1813,†	31	12	52	112	9	8	52⅓	97	8	11	32	73	11
1814,	37	6	26	45	9	8	48	101	10	18	29	126	5
1815,	10	2	47½	83	12	4	26	42	9	4	8	15	3
1819,	5	3	45	85	22					2	69	70	68
1820, 1821,	3					2	164½	272	57	1	36	36	36
1822,	4	2	37	46	29	1	28	28	28	1	39	39	39
1823,	5	1	28	28	28	2	118½	141	96	2	38½	65	14
1824,	4	1	46	46	46	2	64½	69	60	1	21	21	21
1825,	11	5	33	42	19	1	29	29	29	5	58	90	19
1826,	11	1	67	67	67	3	84	120	21	7	42½	79	30
1827,	17	7	66	126	31	4	58½	68	41	6	41	115	1
1828,	6	2	79½	135	24	2	25½	37	14	2	29½	48	10
1829,	21	4	83½	227	6	3	9	18	2	14	36	163	2
Total,	170	47	49	227	6	42	60	272	2	76	36	163	1
Prop. of whole between		⅓&¼				¼				less than ½			

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* One discharged to sick quarters. Seven after this number of days.

† Four sent to the Halifax Hospital. One ran.

TABULAR VIEW of the results in 32 cases of Hæmoptysis at Halifax Naval Hospital.

	Tot. admitted	Cured.	After an average of days.	After greatest No. of days.	After the least No. of days	Invalided.	After an average of days.	After greatest No of days.	After the least No. of days.	Dead.	After an average of days	After greatest No. of days.	After the least No. of days.
1809,	4	2	153	277	29	2	55	102	9				
1810,	1					1	10	10	10				
1811,	4	1	37	37	37	2	25	36	15	1	34	34	34
1812,	3	1	58	58	58	1	3	3	3	1	8	8	8
1813,	6	1	25	25	25	5	25	59	3				
1814,	7	5	15	23	4	2	8	12	4				
1815,	2					2	60	93	8				
1816,	2	1	30	30	30					1	4	4	4
1817,	1	1	8	8	8								
1818,	2					1	5	5	5	1	24	24	24
1819,													
Total,	32	12	47	277	4	16	23	102	3	4	17½	34	4
Prop. of whole,		$\frac{3}{8}$				$\frac{1}{2}$				$\frac{1}{8}$			

TABULAR VIEW of the results in 18 cases of Hæmoptysis at Bermuda Naval Hospital.

1812, 1813,	4	2	35	42	28	2	45	60	29				
1814, 1815,	6					5	19	27	13	1	4	4	4
1819, 1820,	none												
1821,	1	1	18	18	18								
1822,	1	1	107	107	107								
1823, 1824,	none												
1825,	2	2	52	99	4								
1826, 1827,	none												
1828,	2	1	5		5	1	68	68	68				
1829,	2	1	4		4					1	½	½	½
Total,	18	8	37	107	4	8	44	68	13	2	4	½	
Prop. of whole less than		$\frac{1}{2}$				less than $\frac{1}{2}$				$\frac{1}{9}$			

TABLE, showing the Results in 335 cases of Rheumatism at Halifax Naval Hospital.

	Tot. admitted	Cured.	After an average of days.	After greatest No. of days.	After least No. of days.	Invalided.	After an average of days.	After greatest No. of days.	After least No. of days.	Dead.	After an average of days.	After greatest No. of days.	After least No. of days.
1809,	23	16	52	148	7	6	22½	107	8	1	27	27	27
1810,	45	32	40	174	3	13	71	245	3				
1811,	2	10	37	90	8	14	52	270	4				
1812,	32	21	37	85	4	8	70	272	1	2	9	15	3
1813,	83	28	38	148		55	13½	50					
1814,	66	22	21½	73	5	41	14¼	180	1	3	17	30	10
1815,	22	7	22	43	3	14	11	30	2	1	3	3	3
1816,	8	7	76	122	122	1	29	29	29				
1817,	16	5	27	43	15	11	88	150	5				
1818,	13	9	27	84	2	4	14½	39	2				
1819,	3	3	12	8	8								
Total,	335	160	35⅓	174		167	38½	272		7	14	30	3
Prop. of whole nearly		1/2				1/2				1/48			

TABLE, showing the Results in 212 cases of Rheumatism at Bermuda Naval Hospital.

1815,	16	7	20½	42	5	9	25	69	6				
1819,	6	3	18	40	5	3	90	37	16				
1820,	5	5	21	54	3								
1821,	4	2	28½	49	8	1	62	62	62	1	37	37	37
1822,	7	4	39½	65	6	3	69	160	23				
1823,	3	2	25	25	25	1	74	74	74				
1824,	19	19	30⅓	74	3								
1825,	18	16	32	89	2	2	24	26	22				
1826,	11	9	34½	73	9	1	210	210	210	1	165	165	165
1827,	21	18	47	219	5	3	172	250	53				
1828,	66	64	11½	73	3	2	24	25	22				
1829,	36	33	16	59	4	2	35	46	25	1	3	3	3
Total,	212	182	27	219	2	27	65½	250	6	3	68½	165	3
Prop. of whole,		6/7				about 1/8				about 1/71			

From these tables it will be seen, that of 216 cases of pneumonia at Halifax, 136, or nearly two-thirds, are cured; 58, or a little more than a fourth, invalided; and 22, or about a tenth, dead; whilst at Bermuda, of 144 cases, 113, or between seven-eighths and seven-ninths, are cured, only between a ninth and a tenth invalided, and a ninth dead; being more cured, much fewer invalided, and a fraction more deaths. The average time in which the cures were effected is less by very nearly a half at Bermuda; and the average number of days in which the disease terminated fatally is less by four (as 17 to 21) at Bermuda.

Of 265 cases of phthisis at Halifax, 36, or between a seventh and an eighth of the whole, are marked cured; about two-thirds are invalided; and between a fourth and a fifth dead; whilst at Bermuda, of 170 cases, 47, or between a third and a fourth, are marked cured; a fourth only are invalided; and thirty-eight-eighty-fifths are dead; being here also a far greater number cured, still fewer invalided, but in proportion more deaths, as must follow, of course, from the greater number of invalids at Halifax, they being then, as is usual, generally discharged from the hospital; and thus the patients amongst whom the deaths happen are diminished. This obviously was the case, from the average number of days before invaliding, being at Halifax only 25½, whilst at Bermuda it is 60.

The average number of days before a cure at Halifax is 38½, at Bermuda 49; and before death, at the former, 20, at Bermuda 36.

Of 32 cases of hæmoptysis at Halifax, 12, or three-eighths of the whole, are cured; 16, or one-half, invalided; and 4, or one-eighth, dead. At Bermuda, of 18, eight, or nearly one-half, are cured, the same number are invalided, and 2, or one-ninth, are dead; so that here the results are nearly the same; the average time of cure is less at Bermuda.

Having entered on this inquiry, I resolved not to overlook any source of correct information on the subject, nor to shrink from the necessary application. I therefore directed my attention to the Army Hospital returns, to all of which, at Bermuda, through the kindess of my friend, Dr Clark, I readily obtained access. As it would be tedious to give even summaries of these, I shall here confine myself to the annexed table, which includes five years.

In this table it will be seen that of 5231 treated, 4890 are cured; and to these there would be added the greater part of fifty-four remaining in hospital when the return was made out; a thirty-seventh of the whole are invalided; and a hundred and ninth dead. Phthisis is about a ninety-ninth of the whole, of which more than a third are marked cured; a sixth invalided; and 21-53 dead; being all more favourable returns than even at the Naval Hospital of Bermuda.

Pneumonia is a thirty-ninth of the whole, and of this disease there is only one death, and none invalided; though only 124 out of the 135 are marked in the returns cured.

TABLE, compiled from the Returns of the Sick of the Military Garrison at Bermuda.

	Strength of Garrison.	Pneumonia.				Hæmoptys.				Phthisis.				Catarrhus.			
		Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.	Admitted.	Cured.	Invalided.	Died.
1825,	645	14	13							1				9	9		
1826,	604	16	15		1					6	1		3	49	49		
1827,	632	43	43							14	7	4	5	42	39		
1828,	653	31	25			2	2			21	10	2	5	56	48	4	
1829,	681	31	28			1	1			11	1	3	8	43	42		
Total,	3215	135	124		1	3	3			53	19	9	21	199	187	4	
		Asthma.				Dyspnœa.				Rheumatism.				Other complaints.			
1825,	645									12	12			610	551		4
1826,	604					1	1			17	11			1088	1065	24	7
1827,	632	3	2			1	1			41	37	7		1051	1023	66	4
1828,	653	1	1			1	1			49	41			1190	1057	15	4
1829,	681									33	30	2		740	725	14	6
Total,	3215	4	3			3	3			152	130	9		4682	4421	119	25

Total treated, 5231; total cured, 4890; total invalided, 141; total died, 48. Total number of pulmonic affections, 389; total of fevers, 503; total of dysentery, diarrhœa, and cholera, 1476; total of hepatitis, 74; total of ophthalmia, 760.

All pulmonic affections are between a thirteenth and fourteenth of the whole, and of these 113–130 are cured, only a thirtieth invalided, and between a seventeenth and eighteenth dead.

Rheumatism is between a thirty-fourth and thirty-fifth of the whole, and of this only a seventeenth are invalided, and none is dead.

For pulmonic complaints and rheumatism, then, these are the most favourable results we have seen. But whilst the Naval Hospital (Bermuda) gives dysentery, diarrhœa, and cholera, below a twentieth of the whole, here they are between a third and fourth; but the deaths and invalidings are hardly one in a thousand. There are only five intermittent fevers in the returns. The continued are between a tenth and eleventh of the whole; and there are only four deaths in 500 cases. *Hepatitis* is about a seventeenth of the whole.

In comparing the results in these returns with those at the Naval Hospital, it will be borne in mind, that the military, as a regimental hospital, receives at once all cases, as well the slighter as the more severe; whilst the greater part of those sent to the Naval Hospital have already been under treatment, and are sent thither because of their serious nature.

In the garrison returns, ophthalmia constitutes a seventh of the whole; of which a nineteenth are invalided, the disease proving most obstinate and severe, and continuing to prevail, especially in one regiment, for three years,—indeed, until its removal to Halifax. Several men lost one or both eyes. Yet, strong as is the glare from the white verdureless shellstone surface of Bermuda, ophthalmia, especially of any severity, is not usually a serious or a frequent disease.

The last of the three years this regiment was at Bermuda there were fifty-nine cases of ascites, and the preceding year there had been twelve. Though there are only two deaths marked amongst these, they proved very tedious. Those that remained on the removal of the regiment to Halifax got very quickly well.

It is worthy of remark, that, amongst all the cases in the military returns, there are only seven of *delirium tremens*, whilst at Bermuda Naval Hospital there are 140. Of these, 125 are cured, one is invalided, and eleven are dead. Of these deaths, three days are the average time in which they happened; the greatest time is twelve days, and that only in one case, others not exceeding two, except one, which was six, and another four; the least time is one day.

With the same liberality that I have always experienced from the medical officers of the army, I was permitted at Halifax also to have access to the hospital returns of the garrison there. The materials collected from these would furnish further data regarding diseases in a cold climate; but they would require considerable time to arrange them.

Having, at the commencement of these remarks, spoken of Barbadoes as an island to which pulmonary invalids are sometimes sent, I shall here state what I have learned regarding its eligibility for this purpose; being information obtained on the spot, after making anxious inquiry whether or not it were proper to leave there invalids of this description, sent from Halifax in the Hussar under my care. The following extracts of letters, written on the occasion, express the official opinion of the then inspector and deputy-inspector of military hospitals.

The latter writing to the inspector says, "I trust you will not consider me presumptive when I beg leave to call your attention to the frequent fatal results of breast complaints in this climate, and particularly this island (Barbadoes). I need scarcely remind you, that no case comes, even from the out-stations, to this without a fatal termination. My long practice, and consequent experience, has convinced me that medical men are deceived when they recommend persons labouring under breast complaints, or even the incipient symptoms, to come to Barbadoes. I have witnessed the arrival of many, even from Europe, who, I am convinced, would have survived much longer had they not come to this climate. It is too relaxing; it produces an immediate exhaustion; and the subsequent result is generally unfortunate."

Thus the deputy-inspector. The inspector adds as follows: "——— having been recommended by his medical advisers at Halifax to proceed to the island of Barbadoes, for the recovery of his health, impaired in consequence of an attack of hæmoptysis, I feel desirous of stating the result of my experience, and that of the officers serving under me, whose opinion I most respect, as to the propriety of ———'s remaining here, (Barbadoes,) and as to the benefit this climate is calculated to afford to those labouring under pulmonary disease. It may have been supposed that a hot climate must necessarily be of service in all cases of pulmonary diseases, and that the inhabitants of such climates are in a great measure exempt from diseases of this class, both of which positions, as far as my experience goes, are fallacious. A hot climate produces in those lately arrived from a cold one a degree of excitement of both nervous and arterial systems, highly unfavourable to all those who show a predisposition to hemorrhagy of the lungs. This island has since my arrival presented so many instances of the unsuccessful treatment of pulmonary disease that I strongly recommended ——— to proceed to Bermuda."

Such are the official opinions of the inspector and deputy-inspector of hospitals. That of the latter is strong, and to the point of Barbadoes alone. Equally clear, and even more strongly unfavourable, was the opinion of the inspector verbally given; and it was fully in accordance with the opinions of the whole medical faculty, both staff and regimental, as to the rapid termination of phthisis at Barbadoes, and the great intractability of pulmonary diseases, especially inflammatory. One regiment had lost in a year nineteen men from pulmonary inflammation; though the cases had come, as usual, immediately under the surgeons' care. Barbadoes being the head-quarters, and otherwise considered healthy, is converted into a military convalescent station, and great benefit is often derived from the change to it from the other islands, especially in the broken health subsequent to fevers; but in the instance of pulmonary disease, instead of being beneficial, it was rather considered to precipitate the fatal result.

It is hardly necessary for me, in concluding these remarks, to point out that the non-correspondenee on the number cured, invalided, and dead, in the Naval Hospital returns, with the total of admissions, is explained by some of the patients running from the hospitals, some being invalided for harbour duty, and some remaining also at the conclusion of the returns. In a few cases the names of diseases for which patients were received are changed, and they are discharged as having been cured, &c. of other diseases.

To turn to full account the different tables and returns which I have now furnished, it would be necessary to have similar ones from the different hospital establishments in the various quarters of the world. Malta, Jamaica, Rio Janeiro, the Cape of Good Hope, and Gibraltar, are places, the returns from the naval hospitals of which, together with thermometrical tables, it would be desirable to compare with those from Bermuda, and those of the home hospitals, with what I have given from Halifax.

And to make the entry-books of naval hospitals still more certain registers of the diseases admitted, &c. the names (nosological) should be written by the surgeon himself (not by the agent) at the time of admission, if there is no doubt of their nature; but if there be, not until that doubt is removed, after the patient has been a few days in the hospital.

I have bestowed much care in studying to be correct; but it is yet possible that in so many returns some inaccuracies may have passed unobserved. I would not overlook the influence of treatment on the results in returns; but I know not how it is to be estimated.

Art. II.—*Observations, Pathological and Therapeutic, on the Epidemic Cholera, as it has prevailed in Edinburgh and its vicinity.* By David Craigie, M. D. Fellow of the Royal College of Physicians, Edinburgh, one of the Ordinary Physicians to the Royal Infirmary of that City, Inspector of Anatomy for the City and County, and Physician to the Temporary Castle-Hill Cholera Hospital. [*Published by permission of the Board of Health.*]

THE Epidemic malady, which, it is to be hoped, is now almost at its close, has continued in Edinburgh and its vicinity very nearly 9 months, never affecting a very large proportion of the community, but displaying such a degree of virulence, as to destroy in a very short space of time the majority of those attacked by it. During the course of this time, I have had occasion to see and to treat a considerable number of cases, both in private houses and publicly; and though I have no reason to congratulate myself on the success of my measures, I have had occasion to make several observations on the pathology and treatment of the disease, which I have reason to believe may deserve to be made known. It is not my intention, however, to write a formal description either of the semiographic or pathological characters of cholera, but simply to direct the attention of my readers to a few important practical points.

I. Nothing is more variable than the manner in which malignant cholera makes its invasion. In one individual it appears in the form of diarrhœa, that is, frequent, liquid, but feculent stools, enduring for twenty-four, thirty-six, or forty-eight hours, then followed by sickness and vomiting, and the usual profuse sero-albuminous discharges from the intestinal tube, proceeding rapidly afterwards to collapse. In another class of cases, it commences at once with sickness and vomiting, followed by frequent loose stools, and then proceeding, unless arrested by art, with equal rapidity to collapse. In a third class of cases, the first appearance of the disease consists in a sudden copious gush of gruel-like or whey-like fluid from the intestines, without manifest sickness, and followed only after six, seven, or eight hours, with sickness, vomiting, and cramps.

In all the cases which I have seen, in which the disease commenced suddenly with vomiting and frequent loose stools, the patient complained of an oppressive sense of constriction and weight at the epigastric region, preventing the complete filling of the lungs, and causing at the same time a distressing sensation of anxiety. When the disease appeared in the form of diarrhœa only, it was very generally accompanied with a sense of weight and distension between the epigastric and umbilical regions; and the moment the patient became sick and vomited, he began to complain of the painful constriction across the lower part of the chest. These symptoms it was of the utmost importance to watch carefully; for until they were entirely and permanently removed, the peculiar morbid action of cholera could not be considered as arrested.

As the vomiting and purging continued, this symptom became more severe and distressing, and was gradually but rapidly converted into a sense of burning heat at the pit of the stomach, accompanied with unquenchable thirst, and a sense of internal anguish, which the patient could not describe otherwise than by complaining of the sensation of oppressive weight and constriction.

In many of the cases, the vomiting was accompanied with the constant formation of wind in the stomach, producing great distension of that organ, and rendering the process of vomiting greatly more difficult. As the disease proceeded, however, this symptom did not increase, but rather abated; and though occasionally the patient complained of it, it did not appear to be always very permanent or general.

The matter vomited consisted in general of the fluids drank, with more or less mucus. Several attempts were made to ascertain its acid or alkaline qualities; but these were in general attended with fallacy, in consequence of the most of the fluids drank having either free nitric acid, or free tartaric acid, or, on the contrary, subcarbonate of soda in some proportion.

The matters discharged from the intestines were much more various, and may, I think, be distinguished in the following manner.

When the disease commenced by diarrhœa, or frequent loose stools, lasting for hours or days, these stools were always more or less bilious and feculent, but contained an unusually large proportion of watery fluid, and a gelatinous semi-fluid matter. After these had been discharged for some hours, or even for two days, it might be, varying according to treatment and the diet of the patient, on his exposure to, or shelter from, weather,—the first symptom of deterioration was a sudden gush of frothy or yeasty fluid, something not unlike oat-meal and water stirred together, and occasionally like dirty soap-water, which had been already used for washing. This was succeeded by similar discharges at intervals, varying from half an hour to two hours and a-half, but in each case the discharge becoming thinner and more watery, until the oat-meal or soap-washing water was superseded by a small quantity of semitransparent, opaline, sero-albuminous fluid.

This, which may be regarded as the second variety of choleric discharge, when attentively examined, was found to consist of a serous or watery fluid, with a thicker granular matter suspended in it in the shape of albuminous *flocculi*, various in size and shape, but always so much denser than the thinner liquid, as invariably, after a very short time, to fall to the bottom of the vessel. This fluid, which is the *rice-water* evacuation of the East India practitioners, was void of all smell of feculent matter; and it generally emitted a faint mawkish odour, if such a mode of expression can be permitted,—not unlike that of water in which animal matter has been macerated for some time without becoming putrid.

In both of these two forms of choleric discharge, the disease proceeded very rapidly to collapse, and very frequently to the fatal termination. In several fatal cases which have fallen under my observation, the first symptom of the disease was a copious and profuse gush from the intestines of the soap-washing frothy fluid, taking place at intervals, first of two hours, then of one, then more frequently, and at length terminating in the scanty sero-albuminous or rice-water discharge. In one remarkable case, after diarrhœa had continued at a variable rate for nearly three days, and had temporarily subsided on the fourth, early on the morning of the fifth the patient was awakened by a profuse gush of the frothy soap-water discharge, which was speedily followed by vomiting, and continued till seven in the morning, when the pulse was gone. In another case, equally remarkable, after slight bowel complaint had continued all Friday, the 17th September, the patient was awakened on Saturday morning at five by a call to stool, when a profuse gush of the frothy soap-water fluid, rather thicker, however, as if a little oat-meal had been stirred in it, took place, and was repeated at seven, and afterwards several times during the day. Collapse was perfect at nine that evening; and, notwithstanding the use of all remedies during the night, death took place the following morning at nine.

I must nevertheless observe, that many cases in which rice-water or sero-albuminous fluid was discharged in small quantity recovered, either immediately before passing into perfect collapse, or after being some hours in it; but these were either young persons of unimpaired constitution, or adults, who had sufficient energy, dynamic and organic, to resist the pernicious tendency of the malady. I shall afterwards attempt to explain in more specific language what is understood by this energy or vital power.

A third species of choleric intestinal discharge which I have witnessed, consists of watery fluid slightly darkened in colour, and containing a multitude of gelatinous grains of a dark colour, and giving the idea of half-boiled sago, or rather of the sago grains slightly softened and diffused in water. This, I have reason to believe, is one of the most favourable varieties of the intestinal choleric discharge. I have seen it, I think, exclusively in young, healthy, vigorous, adults; and, whether it be owing to these circumstances, or the fact that in such cases the disease admitted of being treated by blood-letting, I have seen no instance of a patient dying who had this variety of discharge. I have not been able to ascertain whether this sago-like discharge succeeded to the oat-meal-water or soap-washing discharge, or whether it came on instantaneously, or succeeded bilious evacuations.

A fourth variety of the choleric intestinal discharge is the wine-lee evacuation;—a dark-coloured muddy fluid, very similar in appearance and colour to the lees of port-wine or claret, but exhaling in general a faint disagreeable animal odour, like the water in which meat has been washed, only more marked and impressive. This is manifestly a sero-sanguine exhalation from the mucous membrane of the ileum and colon. Of this variety of discharge six examples occurred in the Castle-Hill hospital; and in four of these which were inspected, the mucous membrane of the colon was of a purple-red colour and thickened, the submucous tissue was traversed by numerous vessels containing dark-coloured blood, and actually elevating the mucous membrane, and patches of dark-red extravasation were observed scattered over the submucous tissue. In one case, with these appearances were conjoined red injection of the ileal mucous membrane, considerable enlargement of the solitary glands, which were as conspicuous as millet seeds, and numerous large vessels distributed through the submucous tissue. The mucous membrane itself was uniformly covered by a tenacious adherent mucus, of a dark-brown colour, similar to soft viscid currant-jelly, and which could not be removed without repeated washing and macerating in water.

This wine-lee species of intestinal discharge is by far the most fatal form of the disease; and not one of the patients, in whom it took place, recovered. I may add, that it was apparently associated with a peculiarly diseased state of the ileal or colic mucous membrane; since the vessels of this bowel appeared to be enlarged and varicose, and the bowel itself was irregular and preternaturally villous on the free surface.

I have in my account of the epidemic of Newburn remarked, that in collapse the countenance was not always blue, as several descriptions would lead us to suppose, but rather of a dull leaden or dingy colour. This was still the most frequent tint of the face, neck, and extremities, in Edinburgh; but I saw a few instances which exemplified the deep blue tint; and I think the explanation is to be found in the difference of the natural complexion. In persons in whom the complexion is naturally florid, and rather what is termed high-coloured, when collapse comes on, the countenance becomes of a deep-blue; and when this state is completely established, it acquires with the neck, breast, and extremities, a tint not less intense than that of the bilberry. This change I witnessed with particular attention in one very rapid and strongly-marked case, in which the individual had a good deal of colour naturally.

II. Cholera in the different countries of Europe has been distinguished by a third stage, or that of reaction, which has been represented by several observers to resemble the usual characters of typhous fever. I have on a former occasion mentioned, that my observation of the first cases of choleric reaction which I witnessed led me to doubt the accuracy of this view; and my subsequent experience has only tended to confirm this opinion, and to enable me to recognize a wide difference between the state of the system in typhous fever and during the reaction from the collapse of an attack of cholera.

Choleric reaction consists in a congestive state of all the larger vessels of the head, chest, and belly;—the vessels of the brain and its membranes; those of the lungs and the heart; those of the spleen, stomach, and intestines; and those of the liver and kidneys especially. This congestion is not confined to the brain alone, or to the lungs alone, but extends to every part of the sanguiferous system. It approaches in general by slight redness of the cheeks and a little warmth of the face, while the eyes continued still sunk in the orbits, and surrounded by a leaden-coloured *areola*. At the same time the breathing, which had before been slow and languid, becomes slightly freer, but is performed by an extremely labouring and heaving motion of the chest, without, however, seeming to fill the lungs perfectly. At this period there is often hiccup, or even occasional retching or vomiting; and the congestion of the kidneys is indicated by no urine being as yet secreted. In the course of eighteen or twenty hours, if this state did not ameliorate, a degree of drowsy lethargy and sleep came on, from which the patient could be raised, speaking not always very coherently, and often showing hallucinations and other errors of sense; the respiration either became more frequent, with short and incomplete inspirations, or, remaining the same in point of frequency, was slow, languid, and feeble; mucous rattling was heard in the bronchial tubes; the pulse continued heavy and oppressed; and the beat of the ventricles was dull and labouring; the surface at the same time exhaled a urinous odour, and no urine was voided. At the end of twelve or twenty hours more, this state was followed either by complete lethargy and coma, or violent and uncontrollable delirium; the respiration became slow and feeble, or rapid, and with incessant tracheo-bronchial rattling; the surface became cold; the action of the heart still more labouring and oppressed, and without any urine being discharged, yet bilious and feculent stools escaping either involuntarily, or by the use of medicines; the patient, after gasping long in a half-dying state, breathed his last.

Nothing can be more anomalous than the whole of this state of reaction, which embraces, as it were, the symptoms of several different diseases at once; and which, though possessing several common characters, was scarcely in any two patients in all respects the same. These variations occurred not merely in the degree of the affection of each organ, but in the combination of the affection of the different organs.

The symptoms of affection of the head constitute the only features of resemblance between typhous fever and the reaction of *cholera*. But these symptoms, I shall show, indicate an affection entirely different. These symptoms consist in a species of cerebro-meningeal congestion, in which it is very difficult, if not impossible, to draw the load of blood from the internal vessels, and restore the natural and healthy secretions. In children this affection bore a very close resemblance to the meningeal inflammation which constitutes *hydrencephalus*, or terminates in water of the brain. In adults it occasionally resembled the *delirium* of *delirium tremens;* but more frequently it was rather a profound lethargic stupor; and in a few cases it assumed the characters of incessant sleeplessness and unmanageable delirium, with constant speaking and muttering.

The affection of the thoracic organs was not less characteristic. An extreme sense of weight in the chest, incapacity to inspire fully, and frequent sighing or moaning to relieve the anxiety thus occasioned, were the leading features of the disorder.

In general, the respiratory murmur was impaired in intensity, and in some instances it was extinct, or at least could not be heard at the middle of the *demithorax;* while there was more or less mucous rattle in the windpipe and bronchial tubes. The action of the heart was in general very much disordered. While it generally was so forcible as to shake the whole chest, and make the patient sensible of its impulse, it was very oppressed and jarring, as if the ventricles contracted with a vibrating thrill; and the sound was invariably dull.

In most of the cases, when the cerebro-meningeal congestion was not so considerable as to extinguish organic sensibility, the patients complained much of unquenchable thirst, and a sense of gnawing burning heat at the region of the stomach, which was incessant, and often accompanied with the distension of air, which could not be expelled. This sensation, I think, manifestly depended on the congested state of vessels of the stomach and *duodenum*, and the incapacity to propel the blood freely through their communicating capillaries. In some instances, it was accompanied with incessant hiccup; in others with hiccup and retching without vomiting; and in a few with mere distension and pain in the hypochondriac or iliac regions.

In two cases, (Butler and Coventry Thomson,) during this stage, bile, very pure in the former case, was brought up from the stomach by vomiting.

The inert state of the kidneys was always a leading, and in this state a very bad, symptom. In mild cases of the disease, the urine began to flow spontaneously as soon as the stools became bilious, and even before that phenomenon in some instances. But when the patient had been in distinct collapse for many hours, the urine rarely flowed so easily; and it was generally twenty-four or thirty-six hours after reaction commenced that this secretion began to appear in a scanty form. In other instances, however, it did not return at all; and in those in which the cerebro-meningeal symptoms, and the pneumo-bronchial and cardiac oppression continued or increased, the patient struggled in a protracted agony for several days, and died without secreting a drop of urine. This suppression of a secretion so important and necessary to the well-being of the circulating function, might seem to depend on the affection of the brain, and thereby to resemble the suspension of secretion, distinguished by the nosological name of *ischuria renalis.* At first this opinion appeared to me to be well-founded, and perhaps may still be applicable to a variety of cases of secretion, at least in part. But circumstances took place in the course of observing the cause of the disease, and inspecting the bodies cut off in this state, which induced me to modify considerably, if not to change entirely, this opinion. The suppression of the urinary secretion appeared to be part of that general state of congestion of the vascular system, which interrupted the whole process of circulation, and its dependent one of secretion; and it appeared to be very closely connected with, if it did not entirely depend on, the local congestion of the renal vessels and capillary system. This, however, will appear more clearly afterwards.

In order, however, to comprehend thoroughly the nature of this condition, and that of all the others of the system, during the stage of reaction, it is requisite to take a view of the appearances found in the dead subject.

III. In the Castle-Hill hospital I inspected with some care the bodies of 26 patients; and the appearances which were observed were of two kinds;—1*st*, morbid changes common to choleric subjects and others; and 2*d*, morbid changes proper to choleric subjects. These morbid changes were further observed to vary according as the patient was cut off in the stage of collapse, or during the period of *anastasis* or reaction.

I shall, therefore, take a short view of the morbid changes proper to choleric subjects in the two periods of collapse and reaction, and then enumerate the morbid changes found in the bodies of choleric subjects, but which have no immediate connection with that disease or its effects.

1. In patients cut off during the former stage, the following appearances were very generally observed.

The stomach was contracted, and contained some semi-fluid matter, the last taken during life; and its mucous membrane was very uniformly covered by a quantity of viscid tenacious mucus, which adhered very closely. The mucous membrane corresponding to the cardiac region, and to the large arch before and behind, was puckered into large prominent *rugæ* or wrinkled folds, the *apices* of which were ordinarily very much injected with dotted and arborescent vascularity, while the intermediate furrows and spaces were at least of a general rose-red colour, and occasionally injected. This could not be the effect of cadaveric exudation; for it was not removed by washing, and though it acquired a brown tint, it was not discharged by immersion in spirits.

The *rugæ* now noticed are described by most anatomists as parts of the natural structure; and unquestionably they are found in the most healthy subjects after death. But they are always most distinct when the stomach is constricted by the energetic contraction of the orbicular muscular fibres; and in the majority of subjects inspected after death we never observe them. In the bodies of those cut off by *cholera*, their presence and strongly developed form depends, I conceive, on the very forcible contraction of these fibres during the stage of vomiting and collapse.

The gastric mucous membrane was also considerably thicker than it is observed in subjects cut off by other diseases; but this is to be ascribed also chiefly to the contraction of the muscular coat over it; and perhaps in a more trivial degree, to the greater quantity of fluid in its capillaries. It was not, however, softened, unless in one case, in which the whole of the posterior half between the great and small arches was reduced to pulp, and was hanging in loose shreds and patches of various size. In this case also a distinct sharp line of demarcation was observed between the sound and the softened part of the gastric mucous membrane, the former being uniform in surface, and of its usual light rose-coloured gray,—the latter all at once soft, loose, prominent, and easily detached, and of a peculiar dirty ashen or wood-brown colour. The individual, (Thomas Phillips, *æt.* 47,) in whom this irreparable lesion was observed, died in a state of profound and irrecoverable collapse, during which he took several doses of the saline powder recommended by Dr Stevens, and had two ipecacuanha emetics of thirty grains each.

The peritoneal coat of the stomach was almost invariably marked by a slight blush of faint red; and its surface, like that of the intestinal peritoneum, was generally covered with a peculiar glutinous exudation.

This redness of the serous and mucous surfaces of the stomach could almost uniformly be traced to injection or congestion of the vessels distributed in the substance of the gastric filamentous tissue, through which they could be seen, very much filled with blood to their minutest ramifications.

The *pylorus* was always thick and prominent, and its aperture much closed. The mucous membrane of the *duodenum* was in general covered with the same tenacious adherent mucus observed in the stomach, only more tinged with bile; and when this was removed, it was found sometimes of its usual gray colour, at other times slightly reddened. The upper part, for two or three inches, was in general uniform in surface; the inferior always folded into numerous folds, *(plicæ)* or *valvulæ conniventes.*

The intestinal canal was always unusually contracted both in the small and large intestines; and I have several times seen the transverse arch of the colon shrunk as small as a portion of *ileum.* With this contracted condition was usually combined a marbled appearance of the *ileum* especially, the streaks of which were generally in the circular direction of the intestine, and depended on the *plicæ* or *valvulæ conniventes.*

The contracted condition above noticed was occasioned by the forcible constriction of the intestinal muscular fibres; and the marbled or mottled appearance was produced partly by this, but chiefly by the congestion of the vessels of the intestinal filamentous tissue. In several instances, the contraction was so considerable, and accompanied with wrinkles so firm, as to resemble the cadaverous rigidity, and must have been the result either of that or of the spasmodic contractions which constitute so striking a feature of the disease.

The peritoneum, both muscular and intestinal, was covered by a glutinous exudation, which could be drawn out in ropy threads. The intestinal peritoneum presented in general a reddish tint, or a colour between red and pale pink; but when this was closely examined, it was found to depend chiefly, if not solely, on the vessels distributed through the intestinal or subserous tissue.

The intestinal mucous membrane was always covered with a thick layer of viscid adherent mucus, generally tinged with bile at the upper part of the tube, but often colourless below. When this was removed by repeated washing and immersion in water, the intestinal mucous membrane appeared with the *valvulæ* very distinctly marked, the membrane generally slightly reddened, and occasionally thickened, but not softened. This rubescent tint, as it may be named, was very indistinct at the upper or duodenal extremity of the *ileum.* At the distance,

however, of four, five, or six feet from its lower or colic extremity, it became very conspicuous, and was occasionally very distinctly marked.

Along with the rubescence, which was generally slight, the agminated glands of Peyer were in almost every case more conspicuous than natural, and so prominent as to present a distinct elevated line enclosing a patch of the usual elliptical shape, palpable by the finger, and visible to the eye.

It is almost unnecessary to remind the reader, that these agminated glands, which were discovered in 1677 by John Conrad Peyer of Schaffhausen, and represented by him in his *Parerga Anatomica* in 1681, consist of orbicular follicles or minute glands, mutually aggregated and arranged in the form of oblong elliptical or oval patches on the anti-mesenteric surface of the intestine. Each minute follicle consists of a simple sac with a minute aperture, lined by delicate mucous membrane, in which numerous minute arteries, believed to terminate in exhalents, are distributed. These glands in the healthy state secrete much of the mucous fluid with which this part of the intestine is supplied; from these proceed many of the fluids discharged from the intestinal tube; and in all the morbid states of the alimentary canal they perform an important part.

Besides the agminated glands of Peyer, the intestinal mucous membrane presents, especially towards the last three or four feet of the *ileum*, numerous minute bodies, not larger than pin heads or minute millet seeds, isolated and detached, and distributed without any arrangement over the intestine, and from that circumstance denominated *glandulæ solitariæ*, or isolated glands. In the healthy state these are scarcely visible, and can be seen only in a particular oblique light. But when the ileal mucous membrane is by any cause irritated or excited, they are then enlarged, and become conspicuous to observation.

The point at which the patches of agminated glands became distinct, varied in different individuals from three feet to six from the cœcal or inferior end of the *ileum*. In most adults they began to be visible at the distance of five feet; in some, small patches were seen so high as seven feet or eight feet; and in the bodies of two children, they were recognized at a much higher situation.

In most of the bodies of the persons cut off by cholera, one or the other or both of these orders of glands were unusually prominent and well-marked. In the bodies of children, the agminated glands were invariably much more prominent than in adults, and were generally so rough as to induce superficial observers to regard them as ulceration. When, however, they were closely and carefully inspected, they proved to be merely the individual component follicles of the cluster, very much enlarged and swelled. In the bodies of children, the isolated glands were, on the contrary, not nearly so well marked, and were often totally imperceptible.

Conversely, in adults the solitary glands were always very much developed, and acquired in some instances the size of millet seeds, so as to be distinctly seen to render the ileal mucous surface rough and irregular. In one case (Thomas Philips,) in which there had been wine-lee stools with reddish granular bodies discharged *per anum*, similar to gooseberry seeds, not only were the isolated ileal glands enlarged, and prominent, and reddened, but the whole ileal membrane was of a pale or light red colour from vascular injection.

In the majority of adult subjects, however, the agminated glands were developed, in the strict sense of the word, that is to say, they were rendered more distinctly visible, and they were not only more enlarged than natural, but they were redder, and, when held between the eye and the light, the patches which they formed were more opaque than the rest of the membrane.

To give some idea of the prevalence of these appearances in the bodies of those cut off by cholera, I must mention, that, among the 26 cases inspected, 22 presented enlargement and irregularity of the agminated glands; and 21 more or less distinct developement of the isolated glands.

Though I have stated these among the appearances proper to cholera, yet I am not prepared to assert that enlargement of the intestinal glands is not found in other diseases. We know, indeed, that the agminated glands are occasionally enlarged in continued fever, and frequently in diarrhœa and dysentery, and almost invariably in the diarrhœa of infants and children, constituting the disease distinguished by the name of *dothinentcritis*. The isolated glands also are liable to become prominent and swelled, in various intestinal disorders; and only on the 6th November, I inspected in the Royal Infirmary the body of a man cut off by meningeal apoplexy, in which the isolated glands of the lower extremity of the *ileum* were so enlarged, reddened, and prominent, that they looked not unlike small-pox pustules scattered over the ileal mucous membrane.

While, therefore, it must be admitted that this enlarged and developed condition of the intestinal glands is the most frequent and uniform morbid appearance of the intestinal mucous membrane in cholera, it would perhaps be too precipitate to infer that it is either the cause of the profuse discharges, or the effect of the choleric action, whatever that may be. These glands appear to have been in most instances in a morbid state previous to the choleric attack; and as this morbid state appears to consist in an unusual accumulation of blood in the vessels, indicated by the enlarged appearance, and perhaps in some increased degree of excitement, it is not improbable that it may have acted as a predisposing circumstance.

It is remarkable that the follicles of the colic mucous membrane were by no means very commonly or frequently enlarged; and, excepting in four or five cases, though diligently looked for, they were not recognized otherwise than in very minute orbicular *areolæ* or *disci*, not elevated above the surrounding membrane, and chiefly cognizable by the minute central aperture or excretory pore. I have indeed seen these follicles more distinctly in dropsical subjects than I have done in those cut off by cholera.

The other morbid appearances proper to cholera, and observed chiefly in the stage of collapse, though occurring in a great variety of organs, were all nevertheless confined to the vascular system of these organs. I shall therefore begin first with the vascular system itself.

The heart generally presented round its base at the junction of the auricles and ventricles, and along the acute or right margin, a train of dark-coloured ecchymotic spots, irregular in shape, and varying in size from the area of a small vetch to that of a split pea, or even larger. These spots were in the subserous tissue beneath the cardiac pericardium, and were in some instances largest and most numerous along the course of the vessels. Connected with this the surface of the aorta and pulmonary artery, but especially the former, was traversed by numerous minute communicating vessels, very much injected, and forming a complete vascular net-work, encompassing the proper tunics of the vessels. In one or two subjects, but especially in the body of the woman M'Gurke, inspected on the 23d October in the presence of Dr Henderson of Aberdeen, there were distinct ecchymotic patches in the filamentous tissue above the proper coat of the aorta, and which could not be removed by mere immersion in water.

The right auricle and ventricle invariably contained a large mass of semi-coagulated dark-coloured grumous blood, implicated more or less firmly with the *musculi pectinati* and walls of the former, and the *columneæ carneæ* and walls of the latter; and from these a large coagulum, generally fibrinous, extended into the pulmonary artery. The left auricle contained a small quantity of semi-coagulated dark-coloured gore; and a small quantity of the same was very generally found in the left ventricle, the walls of which were always firm and hard, and the capacity very small, as if it had been much and forcibly contracted.

The trunks of the pulmonary arteries and the corresponding veins contained much semifluid uncoagulated blood, in both of an equally dark colour,—at least so nearly of a shade that it was impossible to draw any distinction.

The injection of the vessels of the filamentous tissue outside the aorta, and of the *vasa vasorum*, was continued from the arch of that vessel upwards along the *innominata*, or right subclavio-carotid trunk, and the carotid and subclavian of the left side, as far as these vessels were traced in the neck; and over the arch, and down the thoracic and abdominal *aorta* on the trunk; and occasionally the general sheath of the former vessels and the neurilematic covering of the pneumogastric nerve, were much injected by numerous minute vessels.

The tracheal and bronchial membranes were injected and embrowned, and the mucus which the bronchial tubes contained was tinged with blood.

The proper substance of the lungs was always loaded and almost stuffed with dark-coloured blood, so as to communicate to it a deep brown colour, and impair, if not destroy, its susceptibility of inflation. The substance of these organs was also inelastic, and much more compact than usual, giving a doughy and inelastic sensation to the finger.

Exactly the same appearances were observed in the vascular system of the head and spine and their contents. Thus the scalp was no sooner divided than a quantity of semifluid blood, more or less copious, escaped from the incisions; and even the bone itself was bluer than usual with the blood accumulated in its substance. The different sinuses of the *dura mater*, in like manner, generally contained much fluid or semifluid dark-coloured blood, which continued to flow very freely for some time.

When death took place after some hours of duration in collapse, a considerable quantity of serous fluid was infiltrated into the sub-arachnoid filamentous tissue; and though in early cases this was more scanty, in none was it entirely wanting.

The vessels of the *pia mater*, which were invariably extremely numerous, were, with equal regularity, very much injected, the large ones with dark-coloured blood, the small ones with red; and it was interesting to remark the transition from the former to the latter order of vessels. In some subjects the *pia mater* presented even along its frontal and parietal regions, and at the base of the brain, continuous dark-red patches, as if blood had been extravasated; but this on more minute inspection was found to be blood in the capillary vessels of the arachnoid surface of the *pia mater*. The *pia mater* covering the inferior surface of the annular protuberance and spinal bulb, was also very generally much injected, so as to give that body a very vascular appearance.

The vertebrals, basilar, and carotids and their branches always contained a quantity of dark-coloured blood, which was in no instance coagulated, but was in general semifluid, ropy, and consistent.

The substance of the brain was natural in consistence and colour, unless in a few instances to be specified. But when divided it presented numerous circular apertures of considerable size and transverse fissures, which freely effused blood, in general dark-coloured. The part most conspicuous for these sanguiferous apertures and fissures was, as in other cases, the *corpus striatum* and the anterior part of the *optic thalamus* in each hemisphere.

The substance of the annular protuberance was invariably more or less traversed by large vessels, and exhibited apertures and fissures effusing fluid blood. In one or two instances its grey matter was of a faint rose-red tint. The substance of the cerebellum was in like manner injected, and traversed by numerous blood-vessels, especially in its external or foliated structure. But the part almost invariably most affected in this manner was the gray crust of the *corpus rhomboideum*, in the denticulations of which many minute apertures effusing blood were observed.

The vessels of the central surface of the brain and its membranes were similarly affected. Thus the choroid plexus was always much darker than usual, by reason of the blood in its vessels; and the *velum interpositum* was of a deep-red colour, and traversed by numerous large vessels, containing dark blood. The superior surface of the *corpus striatum* in each ventricle, and each side of the *fornix*, to its posterior extremity, was traversed by several large vessels containing dark-coloured blood. A little serous fluid was occasionally found in the ventricle; but this appearance did not belong so much to the stage of collapse, as to that of sinking after long collapse or partial reaction.

The muscles of the spine were always loaded with a great quantity of dark-coloured blood, which was here more perfectly fluid, than in any other part of the body. The substance of the spinous plates also, and of the bodies of the *vertebræ*, were of a dull blue colour, and effused more or less dark-coloured blood; while the rachidial veins were generally very much filled, and discharged blood freely, and the filamentous tissue of the sheath was perfectly black with blood. It was remarkable, nevertheless, that this blood when collected in pools always presented a sort of oily scum or coating on its surface, and never underwent complete separation into clot and *serum*.

In several instances, perhaps seven or eight, there was at the upper extremity of the spinal chord, in the angle between the bulb and the chord, a considerable quantity of serum infiltrated into the subarachnoid tissue, and elevating the arachnoid from the *pia mater* of the chord. A more uniform appearance was a slight general effusion between the arachnoid and *pia mater* of the whole chord, both before and behind, but perhaps most in the latter situation.

The *pia mater* of the chord was always more or less traversed behind by large well-injected vessels, which, though numerous, were not much less so before. These vessels were in general most abundant and largest in the cervical and lumbar regions; and the individual chords of the brush-like expansion, named the *cauda equina*, were always most completely covered by minute vessels.

The substance of the chord, though firm in most cases, was in one or two a little softer than natural. In other respects, it was sound; and in four only, of nineteen cases examined, did the central gray matter present any unwonted degree of vascularity.

The liver was in general natural in its proper substance; but its vessels were always much lined with dark-coloured semifluid blood, and the *pori* contained dark-green bile. The gall-bladder was invariably full of bile, generally dark-green in colour, and viscid in consistence; and the ducts were pervious.

The spleen was always natural, and the colour of its internal substance was of the usual dark-red or purple tint.

The *pancreas* was unchanged in appearance and structure.

Next to the brain and lungs, the kidneys partook most of the general distension of the vascular system. The external cortical or granular substance was always much darker than natural, and, not only when divided, effused blood from circular apertures and linear fissures, proceeding from the outer to the inner margin, but at the latter, where it unites with the tubular part, presented numerous large vessels emitting dark-coloured semifluid blood. The tubular or internal cones were also much darker in colour than natural; and only when well-washed or macerated acquired their usual tint and appearance. The *papillae* when pressed, emitted always a small quantity of a milky, dirty-looking, opaque, fluid, which appeared to be albuminous urine. This fluid, however, I have also expressed from the renal *papillae* of persons dead of other diseases.

The bladder was in all instances shrunk and contracted to such a degree as to resemble a large fig, or a small apple within the *pelvis*.

2. In the bodies of patients cut off during the stage of *anastasis*, or reaction, the appearances now enumerated underwent in the different organs some modification.

In the first place, the serous membranes, but especially the *peritoneum*, were uniformly covered by a gelatinous viscid exudation, which rendered them very slippery, and might be drawn out in thin ropy threads. This I have already noticed in a slight degree, and in smaller quantity, in the stage of collapse. In that of reaction, in which it was more fully formed and more abundant, it must be regarded as an exudation from the vessels, relieving themselves of the preternatural load by which they were oppressed.

The colour of these membranes was that of the subjacent organs. Thus the *pleura* was of a dark-livid or brown-marbled colour, from that of the lungs; and the *peritoneum* was of some shade of grayish-pink, or faint-red, from vascular injection of the subserous and submucous tissue of the intestinal canal.

The stomach was not by any means so much contracted, nor were the *rugæ* of its villous membrane so well marked; indeed, in most instances they were indistinct or entirely wanting. The cavity of the organ in general contained fluid or semifluid matter, often mixed with a considerable quantity of bile. But the most usual appearance in this stage was an abundant quantity of viscid, ropy, mucus, very adherent, and more resembling the mucous jelly adhering to the stomach of some fishes, than the ordinary appearance of that of the human stomach. When this was removed by washing, the mucous membrane came into view itself thickened, and in some parts rather softer than natural, but not capable of being detached without force. Indeed, this was more a doughy œdematous softening, apparently from interstitial serous effusion, than destruction of the membrane. Reddish patches also occasionally faintly injected were seen towards the cardiac portion and the large arch; and between the eye and the light much vascular ramification and minute injection could be recognized.

The pyloric ring was less prominent, and the pyloric aperture less contracted and wider, than in the bodies of those cut off in the stage of collapse.

The *duodenum* always contained semifluid pulpy matter, much mingled with bile; and the mucous membrane was covered with viscid mucus deeply tinged by this fluid. When this was removed, it was in general possible to recognize the duodenal mucous membrane of a faint rose-red colour, chiefly from minute vascular injection of the sub-mucous tissue.

The *ileum* was much less contracted than in the state of collapse; and in some instances, this and the colon were considerably distended by air. In some parts of the canal, especially toward the lower extremity of the *ileum*, the intestine was generally reddened or coloured of brownish red from vascular injection of its filamentous tissue.

The *ileum* contained more or less pulpy mucous matter tinged with bile, and towards the lower extremity sometimes mere semifluid gruelly matter, without bile, but always with dingy dark bluish-coloured portions, apparently from calomel or blue pill. More frequently, however, especially if life had been continued in imperfect or complete reaction for some days, the contents of the intestinal tube were coloured with dark green undecomposed bile above, and a more perfectly decomposed bile below. The mucous membrane of the *ileum* was immediately covered by a thick layer of viscid adherent *mucus* thoroughly tinged with bile, so as at first sight to look like that fluid. When this was removed by washing and affusion of water, the mucous membrane appeared in general a little thicker than natural, but certainly not softened. The *villi*, however, were more distinctly developed than during the stage of collapse, and also than in ordinary subjects. The *valvulæ conniventes* were always well-marked above, but began to become less numerous, less regular, and smaller towards the lower extremity of the intestine.

The agminated glands were always rather distinct, sometimes elevated and injected or reddened, and the isolated glands were also perceptible in the shape of miliary granules of the size of pin-heads. The intermediate mucous membrane was also reddened, though not remarkably, but never abraded or eroded.

The *pericardium* always contained more or less serous fluid; and the membranes, as well as the mediastinum and the adjoining parts of the *pleura*, were much injected.

The origin and arch of the aorta were strongly injected, and reddened with minute blood-vessels; and this vascular injection, which was in the filamentous tissue of the sheath, and in the *vasa vasorum*, was continued up the *innominata* and its branches, and the left subclavian and carotid into the neck on each side. In those subjects who lingered long in the stage of reaction, this injection was browner and more deep than in those cut off early or during collapse. It was occasionally, but more rarely, accompanied with ecchymotic spots,—a circumstance from which I infer that these ecchymotic spots are the accompaniments of a more violent and irrecoverable form of the disease. This is also corroborated by the fact, that rarely were these spots seen on the right margin of the heart in those cut off during reaction.

The right auricle and ventricle were invariably very much distended; and when laid open, were found to contain large *coagula*, bloody and albuminous, which were closely implicated with the *musculi pectinati* of the former, and the *columnæ carneæ* of the latter, and always sending a large fibrinous *coagulum* on the left side of the tricuspid valve into the pulmonary artery. These *coagula*, which were firmer and more consistent than those found during the stage of collapse, I was disposed, like most pathologists, to regard as formed either after death, or in the last efforts of the heart's action during the dying agonies. When, however, I found them in eight or nine instances adhering most closely by a blood-shot or vascular membrane to the *parietes* of the auricle generally, and especially to the *musculi pectinati*, and also to the base of the ventricle and parts of its *parietes*, and when detached, which always required considerable force, exhibiting a rupture of parts and effusion of blood, I was then disposed to regard them as formed during life, in the stage of collapse probably, and in that of reaction becoming partially organized and attached in this manner to the nearest parts.

Of the extreme difficulty of adducing positive proof of the truth of this view, I am well aware. But I must observe, that, in addition to this anatomical fact after death, I found that in these patients, during life, the action of the heart was heavy and labouring, and its beat dull, as if it contracted not on a fluid which it could expel from its chambers, but on a solid body which was not to be moved, and accompanied with peculiar anxiety and precordial distress. If not one of the causes of death, it was at least one of those which diminished the chance of recovery.

It is important on this point also to remark the different degrees of adhesion of the *coagulum* in the different chambers in which it was found. The part attached to the *musculi pectinati* was invariably most firm and consistent, presented the most evident traces of organized membrane, and adhered so intimately, that it could not be detached without laceration. The portion adhering to the *sinus venosus* was also very firmly attached, and in several cases, perhaps four or five, could not be detached without rupture. The portions attached to the auriculo-ventricular margin and the base of the ventricle were still firm but less adherent than those in the auricle. Those within the ventricle were attached chiefly by their implication with the *columnæ carneæ* and *chordæ tendineæ*, but also in some degree to the *apices* of the tricuspid valve. And, lastly, that in the pulmonary artery, which was always more fibrinous than the other, and less blood-shot, adhered either loosely, or not at all, and was a mere mould of the vessel.

The left auricle, which was small, contained generally an imperfect small *coagulum*, more gory than coagulated; and the ventricle generally contained a similar very small *coagulum*, loose and grumous, and rarely filling the cavity, which, however, was small. The *parietes* of this ventricle were rarely so firm, hard, and constricted as in the bodies of those who expired in pure collapse; and the whole substance of the organ was softer and more flaccid.

The *pleuræ*, both pulmonary and costal, were much and minutely injected; and a little serous fluid, tinged slightly red, was generally found in the cavity.

The tracheal membrane was of a red-brown colour, and traversed by numerous minute vessels. The *trachea* and *bronchial* tubes contained much reddish brown viscid mucus, which was also found in, and expressed from, the minute divisions of the bronchial tubes, though in a more fluid and less viscid form, in the shape of frothy reddish mucus. The pulmonic tissue, or proper substance of the lungs, was of a deep reddish brown, more compact than natural, doughy and inelastic, and in some parts approaching to the aspect and consistence of liver.

These appearances must be regarded as the effect either of the continuance of the state of collapse, or of the succession of reaction to that state; for in all the cases in which I observed it after death, I had ascertained during life the presence of a congestive degree of peripneumony and *bronchitis*, by the presence of laborious and inefficient respiration, incapacity to fill the lungs, violent and oppressive mucous rattle, and impairment or absence of the respiratory murmur in the centre of the demithoracic region. This condition, I conceive, is one of the results of the long-continued accumulation and stagnation, perhaps, of the blood, deprived of much of its serum in the branches of the pulmonary artery and veins; since we can scarcely suppose the substance of the lungs to become so much reddened and embrowned in twelve or eighteen hours after death, without the previous congestive state of the pulmonary vessels during life. Several patients appeared to die with rapid and oppressed, or languid and inefficient respiration, more from this asphyxiated state of the lungs than any other; and in this manner George Cruickshanks, (*æt.* 33,) whom I watched for several days in the stage of reaction, expired. In other instances it was combined with the symptoms of affection of the head; but in all cases it proved one of the most formidable disorders to combat and remove, and contributed most materially to the fatal termination. With such a state of the lungs there could be no respiration; and during the latter state of reaction this function was extremely interrupted and impaired.

In the head the chief changes in this state were a more advanced stage, and a more extensive degree, of the appearances remarked in the bodies of those cut off during the stage of collapse.

Thus the subarachnoid infiltration was more abundant and more opaque, and formed conspicuous whitish gray ridges over the *sulci* at the upper part of the hemispheres, and whitish patches over the commissures of the optic nerves, the pisiform bodies, the intercrural *fossa*, and in the angle between the *cerebellum* and spinal bulb.

No great difference could be recognized, however, in the degree of injection and vascularity of the *pia mater*, unless that it was, if possible, more minute, and communicated a more general redness to that membrane and to the convoluted surface of the organ.

The substance of the brain was also more vascular, and presented a still greater number of apertures and fissures emitting blood. The convolutions were in some cases tinged of a faint rose-red, and points of them seemed rather softer than natural. But the part that was most coloured was invariably the annular protuberance and *crura cerebri*, which in this stage showed a faint rose-red coloration, as if from the sojourn of the colouring matter of the blood in its vessels. The capsules also of the *corpora rhomboidea* of the *cerebellum* were always much redder than the surrounding parts, and than they are naturally.

Lastly, the ventricles were invariably distended or dilated with from four or five to six drachms, or even an ounce or an ounce and a half, of serous fluid. In one case, this effusion had elevated the *fornix*, and expanded and extenuated, but not broken, the *septum lucidum*,—an accident which, I have elsewhere remarked, is always the result of great accumulation of fluid in the ventricles.

Much fluid was in like manner found in the *theca* of the spinal chord and beneath its arachnoid membrane, especially at the atlantal and lumbar regions. In two instances slight softening had taken place in the spinal chord. Its chief morbid appearance, however, was augmented vascularity and rubescence of its gray central pillar.

The vascularity and congestion of the liver and spleen were always considerable; but the substance of the liver was in several instances dry and doughy; and it was the blood-vessels of that organ only which were congested.

The exterior surfaces of the kidneys were very much marbled, and their granular matter was always redder and more injected than natural, and presented numerous vascular pores at the union of the granular with the tubular part. The tubular part was always very much congested and dark-coloured.

3. I now proceed to enumerate those lesions and morbid changes found in the bodies of those cut off by cholera, which must have preceded the appearance of the disease, and which, existing, as they did, in very different organs, had no connection with the choleric symptoms, but nevertheless rendered the chance of recovery much less likely.

It was, in the *first* place, very common to find the heart and vascular system and the lungs more or less diseased. The left ventricle was very frequently affected with thickening and contraction of its chamber, the *concentric hypertrophy* of M. Bertin; that is, the deposition of new matter had taken place chiefly in the internal and central direction. This we observed in at least eighteen cases of adults. In two cases, and, I think, only two, did I find the left ventricle dilated and hypertrophied, or presenting the excentric or aneurismal hypertrophy of M. Bertin. The substance of the heart in the former cases was firm; but in the latter flaccid.

In a very great number of cases the aortic semilunar valves were indurated and thickened; and there was not a single case of an adult in which the proper aortic membrane was not affected by steatomatous, atheromatous, or osseous deposition, commencing generally at the beginning of the aorta, and appearing in opaque irregular patches at the origins of all the arteries, the coronaries, *innominata*, carotid, and subclavian arteries, and rendering the inner membrane, which was elevated and irregular, lacerable and liable to be ruptured by the mere impulse of the blood. In two instances the aortic arch was dilated and enlarged. In one case (Knowles) the coronary arteries were ossified throughout their whole course; and one of them I dissected out and removed. In all the cases of adults, also, the arteries of the brain had begun to become opaque by the steatomatous deposition in patches or points. This was most frequent in the internal carotids at their emergence from the carotic canals, in the vertebrals, and in the basilary artery. Patches also were seen in several cases in the arterial canals of the circle of Willis.

It is well known that this steatomatous or tyromatous deposition is observed principally in those who have been addicted to the use of spirituous liquors, if young or middle-aged, and is very frequent in advanced life, even in those who have not indulged very freely in these fluids. It is often found also associated with apoplexy, palsy, pulmonary hæmorrhage, and all those disorders in which the vascular system is liable to preternatural injection, congestion, or effusion of blood. The existence, therefore, of this degeneration in the bodies of those cut off by cholera merely adds another to the many confirmations of the principle, that cholera selects its victims among those chiefly whose organs are already diseased.

In the pulmonary organs various morbid changes were recognized. In one case, (Elizabeth Abernethy, æt. 50,) the *pleura* investing the *apex* of both lungs was thickened and converted into smooth cartilage, or a polished substance as fine as bone. In the body of William Falkner, (*æt.* 50,) the *pleura* investing the *apex* of the right lung was in like manner indurated, thickened, and almost ossified; and in that of Thomas Phillips, (*æt.* 47,) the *pleura* covering the same part was also in a state of cartilaginous induration. In another case it was extensively asperated by numerous miliary tubercles. Adhesions of old date, and of greater or less extent, were very common, and were observed at least in twenty or twenty-two of the cases;—in one instance, Jean Randall, most extensive, firm, and thickened. In two cases, one (William Younger, *æt.* 21,) reported a habitual drunkard, and the other (Margaret Paterson, *æt.* 40,) numerous minute red spots like petechiæ appeared in the *pleuræ* at its attached surface.

In six or seven of the cases there were calcareous concretions in the lungs; and I think I generally traced them to branches of veins—a fact which, if verified by others, generalizes our knowledge of these bodies, by referring them to the general head of *phlebolites* or vein-stones. In the body of William Falkner, (*æt.* 50,) there were in the pulmonic tissue, immediately subjacent to the *pleura*, and disseminated through the lung, several minute bodies, very hard, and requiring to be forcibly divided by strong scissors, and of a deep black colour. The superior part of the right lung of George Cruickshank, also, was much occupied by minute bodies like millet-seeds, dark-coloured, but semitransparent, and similar to the miliary tubercles described by Bayle. In both lungs of Mrs Adie, (æt. 47.) were disseminated many dark-coloured hard bodies, irregular in size and shape. Ordinary tubercular induration was found in six or seven cases at the superior part of the lungs.

I feel some difficulty as to the head to which I should refer the compact doughy state of the centre of the lungs, so often found in the bodies of those cut off by cholera. This lesion I have already mentioned as one which, with the bronchial induration, in my opinion, explains the difficult and oppressed respiration which precedes the fatal event. In several instances, nevertheless, the lung was so compact, solidified, and dark-brown, with bloody engorgement of its proper tissue, that I am inclined to think some considerable lesion of the tissue of these organs must have existed previous to the choleric attack. This was the case with the right lung of George Cruickshank, *æt.* 33; the right lung of William Younger, in which there were masses compact, doughy, and slightly indurated, but not circumscribed or defined induration, with the left lung of the same subject, in the inferior lobe of which were several masses of distinct induration; the right lung of Thomas Phillips, in which the compact doughy portion emitted, when divided, a great quantity of dark, inky, dirty fluid; the inferior part of the right lung of Elizabeth Abernethy; and in several others. It is by no means unlikely that these patients previously laboured under a degree of peripneumony or congestive disease of the lungs.

In two cases, that of Jean Macdonald *(æt.* 46,*)* and Coventry Thomson *(æt.* 50,*)* the upper surface of the liver was attached by old extensive false membrane to the diaphragm, indicating previous hepato-peritoneal inflammation. In another, E. Abernethy, there was a peculiar notch or fissure in the substance of the liver corresponding to the gall-bladder, so that the two portions of the liver were here conjoined by thickened or duplicated *peritoneum* only. The substance of the liver was rarely in a state of perfect integrity. However much its vessels were loaded, its proper glandular substance was dry, doughy, and altered in colour. Incipient *cirrosis* or yellow degeneration was a very common appearance. In a boy of 10, James Barr, who died in the stage of reaction with severe and uncontrollable affection of the head, this organ presented more extensive and marked disease than I ever witnessed in any person so young. The gland was indurated generally in its whole substance, and presented various minute circumscribed portions of a light or fawn-coloured matter extremely firm and solid. The left lobe was so hard as to grate under the knife; and its interior substance consisted of irregular-shaped globular masses of a pale red or orange colour, in some instances gray, in which no trace of the original structure of the organ was recognized. In Jean Macdonald, already mentioned, in the inferior surface of the gland, about *one* inch on the right of the cystic *fossa*, there were two depressions occupying the anterio-posterior diameter, as if the result of previous fissure and inflammation. In Jane Paterson, *æt.* 39, there were several globular vesicular cysts containing clear water, and resembling hydatids.

The spleen presented in several cases induration of its outer tunic, and in three or four cases minute concretions in its substance, most probably belonging to the veins of the organ.

The pancreas presented nothing very unusual. In several cases, at least eight or nine of the adults, the pyloric extremity of the *duodenum* was irregular and indurated slightly, apparently from chronic irritation of its glandular apparatus. In one case, that of Mary M'Gurk, a woman of 45, the pyloric ring was indurated and the aperture contracted.

In six cases the mucous membrane of the colon was very much diseased. In two of these it was thickened, extremely dark-coloured with the blood in its vessels, which passing through the submucous tissue were large, numerous, and distended; and though, after immersion in water, a large proportion of this coloration was destroyed, when the membrane was brought into view, it presented numerous elliptical and circular breaches of surface, varying in size from a pin head to a garden pea, or even the area of the section of a small bean. In two others there were large oblong breaches of the mucous membrane, irregular in shape, but affecting chiefly the oblong elliptical, one inch broad, and sometimes two and a-half or three inches long. In one of them, now before me, though there is a complete destruction of the mucous membrane in several large patches, its place is partly supplied by an irregular tubercular sort of growth of a wood-brown colour, and which could be removed by the forceps, and then bore the appearance of a false membrane or new growth. Of one of these patches I have given a representation in Figure 3d.

The organs most frequently and remarkably diseased in both sexes and at all ages were the kidneys. In these we witnessed every gradation and variety almost of the morbid changes delineated by Dr Bright. In every case almost the exterior surface of these glands was more or less deeply fissured and lobulated—approaching in this respect the original type of the fœtal structure. Not a single case occurred in which this surface was not more or less marbled, mottled, and congested with blood. In at least nineteen cases the external granular matter was unusually marbled and variegated with whitish patches, and harder than natural; and in several the granular matter encroached on the tubular to a degree that indicated absorption or destruction of the latter. In five instances the granular matter conversely was unusually thin.

The yellow degeneration of the granular part of the organ, or what is probably *cirrosis* of that organ, was observed in a most perfect form and exquisite degree, affecting the granular tissue in Jean Macdonald, aged 46, a woman who had rallied from the state of collapse after saline injection into the veins, but who afterwards sunk under an uncontrollable affection of the head and the constitutional shock of inflamed vein. In Mary Turnbull, aged 23, both kidneys were irregular and tuberculated on the surface, and rather paler or more fawn-coloured than usual; and the granular matter, which was also fawn-coloured, showed, perhaps, an early stage of *cirrosis*. The tubular part, however, was natural. I should be chargeable, however, with unprofitable tediousness, were I to enumerate all the shades and varieties of this morbid change in the kidneys of those attacked and cut off by cholera; and I must satisfy myself with the following remarks.

That these changes do not depend altogether on age, or the long continuance of dissipated habits, must be inferred from the appearances exhibited by the kidneys of a girl of 18, whose body was inspected on the 25th October. The surface of both glands was fissured and lobulated, and much variegated with deep reddish-brown lines of vascularity. The granular matter of the right kidney was paler, and more fawn-coloured than natural; and a grayish homogeneous mass had usurped the place of the granular tissue, and encroached much on the tubular part of the middle of the gland, so as to extend irregularly from the convex surface to the sinus of the organ. The surface of the left kidney was very much mottled, and irregularly variegated with brownish patches. The granular portion was in like manner paler than usual, and much attenuated; and a mass of gray matter, with red margins of irregular shape, and without distinct organization, occupied in the centre of the kidney the place of the tubular portion. The *papillæ* in both kidneys effused, when pressed, a quantity of opaque semifluid reddish matter, something like milk tinged with blood.

The tubular part of the organ was generally itself much redder and more injected than in healthy subjects. In two cases in which it was much indurated and preternaturally firm, the granular was soft, flaccid, marbled, and attenuated.

I have still to mention two remarkable examples of disease of the kidney, of a different kind entirely, In preparing to remove the right kidney of Jane Reid, I was struck with the feeling of a hard globular resisting body; and as I felt that it adhered to the transverse arch of the colon very firmly, I cut open that bowel, and found corresponding to the point of adhesion a puckered depressed space, with a distinct aperture in its centre. This had a urinous smell; and a probe inserted into it grated against a very hard body. I was now satisfied of two things;—*first*, that a urinary concretion was contained in the *pelvis* of the kidney; and *secondly*, that a fistulous opening had been formed by adhesive and ulcerative inflammation between the kidney and the colon. Accordingly, by making an incision in the upper part of the kidney, I exposed a *calculus* as large as a good sized walnut, with a brown-coloured irregular surface, and I found that the probe passed freely up from the colon into the cavity in which the concretion was lodged.

I have already mentioned the case of a woman, Jane Paterson, aged 39, in whose liver several globular vesicular cysts were found. The kidneys of the same individual presented the most remarkable assemblage of serous cysts I have ever witnessed. Not only was the surface of each kidney thickly studded with these cysts, which were various in size, from that of a garden pea to the magnitude of a grape, or even a large gooseberry; but the interior substance was occupied through its whole extent, so that a section of it rather resembled a piece of *breccia* or plumb-pudding-stone than a kidney. The figure of these cysts was spherical or oblong-spheroidal; and they consisted of a thin semitransparent membrane, sometimes traversed by blood-vessels, occasionally not, containing a limpid fluid, or a fluid tinged slightly yellow or bluish-red. Though similar to what are named hydatids, they presented none of the characters of these parasitical animals.

The womb and ovaries were always more or less diseased in the females cut off by cholera. In the body of Jean Macdonald, attached to the *uterus* was a large globular very firm tumour, with membranous *septa*, and even osseous nodules in it. The neck and orifice of the uterus was in several cases indurated to an extreme degree. The ovaries were not in a single case, either young or old, free from morbid change. Vesicular serous cysts of various sizes, bloody cysts, tubercles, or indurated masses, were found in every one of the cases inspected. In the whole of the cases, also, the peritoneal tissue of these bodies was rough on its surface, and thickened and indurated in its substance, indicating the previous existence of inflammatory action at a remote period.

The lesions now enumerated it is important to distinguish, not as illustrating the morbid anatomy of cholera, with which they are in no immediate way connected,—but because they show that in all the cases in which that disease is fatal, some great and signal change exists in the texture of some important organ, and consequently, that in these cases the system possesses in itself those essential morbific principles which determine the developement of disease, dynamic or organic, in one or more of its constituent organs. They show that the individuals cut off by cholera must at no remote period have fallen beneath the slow and insidious but sure influence of organic disease; and that cholera had merely anticipated by a year or two, probably much shorter time, the extinction which must have resulted from the continuance of an affection of the heart or lungs, or disorder of the intestinal tube, or an incurable lesion of the kidneys or *uterus.*

In drawing this conclusion, I of course proceed on the principle, that one or more of the lesions which we found in all the cases inspected must have existed in those not inspected, at least to an equal, probably to a greater, extent. Particular circumstances occasionally prevented us from inspecting several of the cases. Wherever the friends opposed inspection, prudence prevented us from attempting it clandestinely; and to insure the confidence both of patients and their friends,—an object which we found of consequence even in conducting the treatment,—we made a rule never to inspect any subject, in which it was to be apprehended that such a proceeding would have led to any excitement of the feelings of the friends, and thereby to popular commotion and outrage. The necessity of this conduct was indispensable, both for the security of the hospital and the tranquillity of the minds of those for whose benefit it was intended; and such at length was the effect produced, that in one instance, in which a patient had died in the High Street, his friends applied to the house-surgeon and myself to inspect the body; and in other two instances, in which patients died in the hospital, the relatives solicited us to inspect the bodies of both. Though on these accounts our inspections did not embrace the whole of the deaths, I think they embraced a sufficient number to justify the conclusion now specified, that they afford a fair view of the average result of what may be expected in the corpses of cholera subjects.

If the views above specified be well founded, they lead to another inference, which I confess has thrust itself on my mind repeatedly and forcibly during this epidemic. All of us know the frightful and unequalled mortality which it has caused; and though some persons pretended at its first appearance, to assert that the average annual mortality was not, and would not, be increased, no one who had been for a very short time attending to its progress could deny that the mortality between October 1831 and October 1832 is much greater, by many thousands, than the mortality for 1830-31, or 1829-30.

This fact, however, being admitted, it may be, with a considerable degree of confidence, anticipated, that the average annual mortality for the years 1832-1833, and the subsequent years, will undergo some diminution, and that, if the whole mortality for the ensuing ten years, after the disappearance of cholera as an epidemic, be compared with that for the preceding ten years, including of course the epidemic year, or eighteen months, it will be found that the annual averages will be rather less, and certainly will not be more.

The reasons on which I found this inference are the following. The majority, if not the whole, of the persons who have fallen victims to cholera, must at no long period have become the prey of disease of the heart, lungs, or kidneys, in the form of apoplexy, or dropsy, or consumption; or of the intestinal tube, in the shape of chronic diarrhœa; or must have slowly sunk under uterine or ovarian disease. Or, even if they resisted the slow and certain operation of these maladies, they might have become the victims of fever, catarrh, or an acute attack of inflammation in any one of the organs already disordered. It must, indeed, be manifest to every one, that the same order of individuals who are annually cut off by fever, local inflammation, dropsy, and chronic diarrhœa, or dysentery, afford the most numerous supply of subjects to cholera. It cannot, therefore, be denied, that those individuals who are destroyed by cholera, will no longer remain to become the victims of fever, of apoplexy, of lethargy, of dropsy, or consumption, and that, consequently, the list of deaths under each of these heads must be diminished by the entire number of those who have fallen victims to the choleric epidemic.

To render this reasoning obvious to the general reader, I shall represent it in the form of algebraic notation. Let the general mortality from all diseases, for one year, be represented by the letter Θ, and, of course, the individual or integral parts of this be represented by the initials of the respective diseases; viz. ϖ, fever; κ, heart disease; ϖ', lung disease; α, apoplexy and palsy; and $\dot{\upsilon}$, dropsy from renal disease; then,

$\varpi + \alpha + \kappa + \varpi' + \dot{\upsilon}, \kappa, \tau, \lambda = \Theta$; and the mortality for ten years is, $10\,\varpi + 10\,\alpha + 10\,\kappa + 10\,\varpi' + 10\,\dot{\upsilon}\,\kappa\,\tau\,\lambda = 10\,\Theta$.

But during 1831-32,—for twelve or fifteen months, or even eighteen,—many of the subjects of the first series of terms must have been cut off by χ, or cholera; and though it is observation alone that can tell us the exact proportion of each of these items that must fall victims to cholera, the mortality for 1831-1832, therefore,—a few months more or less,—is represented by the following symbols:

$$\frac{10\,\Theta + \chi}{11} = \Theta, \text{ annual mortality.}$$

And on this principle the mortality of cholera is distributed over ten previous years. But this mortality must, according to correct views, be distributed not only over ten previous years, but with much greater justice over ten subsequent years; since, as I have already shown, cholera has anticipated the deaths that must have been occasioned by five or six other maladies; and it may be inferred with pathological certainty, that no patient with any of the lesions which I have enumerated could have survived for ten years, or even the half of that space of time. For the subsequent period of ten years, therefore, we have the following expression for the annual mortality:

$$\frac{10\,\Theta - \chi}{10} = \Theta$$

$$\frac{10\,\Theta}{10} - \frac{\chi}{10} = \Theta, \text{ the annual average.}$$

But $10\,\Theta = 10\,\varpi + 10\,\alpha + 10\,\kappa + 10\,\varpi' + 10\,\dot{\upsilon} + \chi$, at least for the ten years from 1831 to 1841. And pathological inspection, it may be allowed, has proved that χ and ϖ, α, κ, ϖ' and $\dot{\upsilon}$ run on the same line, as it were, or destroy nearly the same class of individuals. Whatever is consumed, therefore, during the epidemic year by χ, will not be left to be destroyed by the other diseases represented by the symbols, π, a, &c. and consequently, as χ is augmented, these other quantities must of necessity be diminished. Hence, the deaths by each of these diseases, diminished by a tenth part of the mortality produced by cholera, will represent the average mortality for each year till 1841 or 1842.

These conclusions also proceed on the principle, that cholera, as an epidemic, will not continue to prevail in the places where its ravages have of late been so conspicuous. I am aware that any very positive conjecture on this point must at the present time be presumptuous, if not rash and precipitate. It is believed by many, on the evidence chiefly of the Indian history of the disease, that, once introduced into the cities and towns of Europe, it will continue its stay, and become eventually naturalized. At present, I may remark, we have no means either of proving or confuting this conjecture. But it seems inconsistent with the history and characters of a disease, which in general appears so suddenly in a community, affects such numbers, and disappears in so short a period, to imagine that it can continue to recur annually in an epidemic form, or even after a series of five or ten years. It is doubtless the fact, that the disease recurred twice in Astrachan within a period of three years; but it may be replied that this was more likely to take place in such a locality within that short space than after the lapse of 10 or 15 years. If, therefore, we can expect with any shadow of reason, that cholera is not to recur for a series of years in an epidemic form, then we may predict with some confidence the abatement of mortality from other diseases now specified by the distribution of the choleric mortality over a considerable cycle of years. A few sporadic cases may occasionally occur; but even these would not materially affect the great general results. Of course several corrections must be made on this estimate by ascertaining the numerical mortality. My present purpose is merely to explain the general principle.

The results of the inspections are useful in another point of view. They contribute to explain, if they do not completely account for, the difficulty of curing the disease, and the general inefficiency of remedies. Cholera is a disease of that kind that appears, as it were, to smite with a violent stunning blow all the organs of the living frame, and to rob them for the moment of a large proportion of their vital powers. Physiologically speaking, the lungs, and the greater part of the circulating system of a patient smitten with the collapse of cholera, are for the time inert, powerless, and dead. A mass of semifluid inspissated blood stagnates in the former organs; and atmospheric air, though admitted through the windpipe, has no effect on it, because,

instead of being propelled freely to the communicating extremities of the pulmonary artery and veins, it either moves sluggishly along, or remains motionless in the large trunks and their immediate small ramifications, without percolating the capillary net-work. This state, which commences on the right side of the heart and in the lungs, is continued to the left chambers of the organ and the circulating system at large; and the arterial blood, which should be running freely in the different organs, is accumulated in thick semifluid masses in the larger vessels.

Were all the organs of a subject thus attacked anatomically sound, we can imagine a temporary suspension of function of this kind, from which recovery might take place; because, if the capillaries of an organ are pervious, and in other respects natural, they might, before their natural sensibility and erethism are completely extinct, begin to act on their contents, and resume their proper functions. With such lungs, however, and such kidneys as most of the subjects presented, restoration of this nature was out of the question. The natural powers of the capillaries, impaired and enfeebled by previous disease, possessed too little energy to withstand the deleterious influence of so violent a shock. They had no longer sufficient sensibility and irritability to contract on their contents, and seemed to yield passively and like inert tubes to the irresistible force of a gradually augmenting local congestion. Hence, when a slight rally from the state of collapse did take place, one or other of the organs essential to life seemed still to be oppressed by a load, of which all our methods were inadequate to relieve them.

IV. In conducting the treatment of cholera, our therapeutic measures were varied according to the stage of the disease, and the general character of the symptoms. In the first cases which I witnessed on Saturday 21st January at Musselburgh, the leading symptoms consisted, besides vomiting and purging, of a sense of fulness, weight and distension at the epigastric or umbilical region, or both, with quick, throbbing pulse, heat of the surface, and much thirst. In these circumstances, blood-letting, followed by opiates, with castor oil or the colocynth pill, was employed by Dr Stephen and Mr Veitch, who had the management of the cases in Newbigging,—a particular district of Musselburgh,—and with great advantage and success. The first effect of the blood-letting was to aggravate the cramps, if present, and to induce them, if not. But it was quickly followed by relaxation of the system; diminution, and the total removal of the epigastric-umbilical weight and distension; cessation of the vomiting and purging, and rapid and sure convalescence. This mode of treatment required, indeed, two conditions,—one, the early and preliminary stage of the disease, before the approach of collapse,

—the other, that of the patient having otherwise a good and comparatively sound state of the different organs. In several instances, in which there was less of the epigastric weight, and chiefly frequent profuse alvine evacuations, the exhibition of castor-oil, the colocynth pill, and calomel, alternated with opiates, was adequate to remove the disease.

In the Castle-Hill Hospital, when I entered on duty in the beginning of July, I found the employment of blood-letting in treating cases of cholera, with the conditions specified, in general use, having been practised much in the same way, in cases in which it was admissible, by my able predecessors, Mr G. Hamilton Bell and Dr Begbie. The blood-letting was generally followed by large doses of calomel and opium, repeated according to circumstances.

The method which I generally followed in cases with choleric vomiting, purging, and great epigastric weight, was to detract twelve, fifteen, or twenty ounces, as the strength of the patient allowed; to give after this ten grains of calomel, and half a grain of opium; and to repeat this dose at the end of two or three hours, according to circumstances; and in general, in cases of this kind, little more was required, except to continue the employment of colocynth pill, with or without the blue pill or calomel, until the alvine discharges became less frequent and more natural. The great object at this stage of the disease is to stop the vomiting and purging, and prevent by all means the approach of collapse. To illustrate this mode of treatment, I shall mention the particulars of three cases, in two of which most assuredly, if the means now specified had not been employed, the patients would certainly have proceeded to collapse.

1. Mrs Weir, æt. 24, residing in Allan's Close, Grassmarket, whose husband died two days before of cholera, was attacked at three in the morning of the 9th July, with purging of dark-coloured watery matter, to which vomiting was superadded about nine. When admitted at 11 A. M. the vomiting was frequent of whatever she drank, with much epigastric weight and some constriction; thirst was great; she had frequent profuse discharges of sago-like watery stools from the bowels; the pulse was 112, rather creeping; the head was confused, with some giddiness; the countenance had still some remains of its natural colour; but the eyes were already perceptibly sunk, and surrounded by a bluish *areola*, and the voice was slightly affected; the extremities, however, were warm. Blood-letting to twelve ounces was ordered; but after seven were drawn, she became faint, and the pulse began to give way. As she had much flatulence, fifteen grains of the compound rhubarb powder were immediately given, and ordered to be repeated after two hours. At two o'clock, when she was seen again, she had vomited the powder, and, with much sickness and some purging, she had suffered several

attacks of cramps in the lower extremities. The pulse, however, was 96, and she had less confusion of head. The blood-letting was now directed to be repeated to the extent of ten ounces; but after eight had been drawn, faintness and failure of the pulse again came on. Five grains of calomel and half a grain of opium were given by the mouth; four ounces of port-wine were injected into the intestines; and, to allay the thirst, coffee *ad libitum* was ordered.

At nine in the evening, though the pulse was at 100, of good strength, and the vomiting had ceased, she had had several discharges of watery fluid, with brownish *flocculi* like dissolved sago; cramps had occurred slightly; the tongue was moist, slightly furred, and cold; her thirst was intense; she had made no urine; and the extremities were rather colder than was desirable. An enema, consisting of six ounces of port-wine, six ounces of very warm water, and half a drachm of sedative liquor, was ordered to be administered; sinapisms were applied to the epigastrium and legs; and gruel was ordered for drink.

There was no recurrence of vomiting or purging after eleven that evening; and after some sleep, she awoke next morning with the pulse at 88, firm, and becoming full, with less epigastric weight; the tongue was dry and somewhat brown; and she had voided some urine. The only unfavourable symptoms were the persistence of the depression of the eyes, and occasional hiccup, with slight sensation of epigastric load. She was now ordered five grains of calomel, with ten of rhubarb, and five drops of clove-oil in the form of bolus, and to continue the use of the gruel. In the evening she continued to improve; but the countenance had become flushed, the pulse was 100, and full, and she seemed threatened with serious head symptoms. The hair was therefore removed, and cold cloths were applied; and she was ordered an ounce of castor-oil the following morning, that sleep might not be disturbed by its nocturnal operation.

One dark-coloured feculent stool, the first voided, had taken place during the night; urine had been voided several times; the pulse was again down to 90; the respiration was natural; and the tongue was covered only with a slight white fur. The castor oil, however, had been rejected, and much vomiting and some purging followed. Another dose of calomel and rhubarb, with six drops of clove oil, was now given and retained; and in the evening, when the vomiting had subsided, the pulse was 78, the epigastric weight entirely gone, and the respiration natural; the tongue was clean, and, the appetite returning, she had no complaint. Two ounces of port wine with hot water, and some dry toast, were allowed as supper and anodyne; and next day she was free from complaint, and the countenance was becoming natural.

On the 18th, she had some swelling of the belly and lower extremities, with scanty high-coloured urine. Three compound colocynth pills in the evening, and a drachm of the compound jalap powder in the morning, removed these symptoms entirely.

2. On the 3d October, at 12 noon, I was requested by Mr Moir, to

see Mr H. a man aged about 35, who had been attacked in the night with frequent vomiting and purging, followed by cramps in the legs and arms in the morning. When I saw him, his pulse was 140, and very small, the breathing was anxious and labouring, with great weight and oppression at the *sternum* and *epigastrium*, preventing full inspiration, and thus apparently rendering the respiration labouring and rapid. He was sick, very thirsty, vomiting frequently, and had repeated discharges from the intestines of dark-coloured watery fluid, like macerated sago. A vein was immediately opened, but when twelve ounces were drawn, his pulse began to flag, and he felt faint. A thebaic pill, and six grains of calomel, were administered.

At 4 P. M. he still continued to vomit, and to discharge the macerated sago stools; he had the same oppressive weight at the epigastric region, the same thirst, and no urine had been voided since last night. The pulse was still about 140, and the respiration labouring. Ten ounces more blood were drawn, six grains more of calomel were given, and the colocynth pill was ordered every hour.

At 7 P. M. the epigastric oppression was decidedly diminished, but not gone; he was vomiting occasionally whatever he drank; the stomach was distended with air, and some more macerated sago-fluid was discharged. No urine was voided, and the pulse was 130, very small. Fifteen ounces more blood were drawn, with the effect of relieving the oppression and allowing inspiration to be deeper; and he was ordered every half hour a powder, consisting of one scruple of carbonate of soda, two grains of nitrate of potass, and three grains of ginger; and to have one thebaic pill at nine, and one blue pill, with one colocynth, every hour, till four of each were taken. He was ordered oat-cake toast-water for drink.

The following morning, though only two pills of each kind were taken, he had slept at intervals; the epigastric oppression was much and sensibly relieved; the vomiting was less frequent; the skin was warmer and moister; the cramps were gone; and he felt more comfortable. The purging of sago-like matter, however, continued; he was very thirsty; the pulse was 110; and no urine had been voided. He was ordered to take the other two blue pills, and to continue the soda powder: and if the stomach continued or became less irritable, to take one ounce of castor oil in the afternoon, to have weak chicken-soup, and oat-cake toast water. At 4 P. M. though the characteristic purging continued, the vomiting had not returned, the epigastric oppression was gone, and the pulse was 100, and fallen. An enema was ordered to be administered, and was followed after an hour, or a little more, by some scanty feculent bilious discharge. The colocynth pills were directed to be continued; and with the chicken-soup, he was to have a little dry toast.

On the morning of the 5th, some scanty bilious feculent discharge had taken place; and, if this was not augmented within an hour, an *enema* was ordered to be administered; pulse 92, full and firm. At 9 P. M. very copious feculent discharges had taken place; the pulse was reduced to 80, full and firm; the breathing natural; and urine had been voided several times. On the following day, when an immense quantity of feculent matter had been evacuated, he was free from complaint.

3. In a third case of the same kind, a gentleman, after exposure to wet, on the 7th and 8th of October, was attacked during the night of the latter with profuse purging of bilious, serous, and then sero gelatinous matter, which on the morning of the 9th had a dark-green tinge, as if from undecomposed bile, and contained a multitude of minute jelly-like grains, similar to macerated sago. On the morning of the 9th also, he felt sick, and vomited what he took to breakfast; he had several cramps of the legs, and coldness and moisture of the feet. He had taken three pills, containing each three grains of calomel and one of opium.

When I saw him at eleven on the morning of the 9th, the pulse was 96, small; the sense of uneasiness at the epigastric region was felt, but not oppressively; and the chief complaint was much thirst, squeamishness, and some stupor from the quantity of opium taken.

Eighteen ounces of blood were instantly detracted, with the effect of rendering the pulse softer and freer, the skin and extremities warm, and removing the tendency to cramps. Ten grains of calomel without opium were given; and in the evening five grains more with half a grain of the drug. At this time, though the profuse watery discharges without smell and containing partly undecomposed bile, in ropy threads, partly the gelatinous grains, continued, and no urine had been made since early in the morning, or rather late last night, the thirst was abated, the vomiting had not returned, the pulse was fuller and softer, and the skin generally warm. There was considerable feeling of rumbling and uncomfortable movement in the bowels; and, with the view of allaying this, and checking the action from which it arose, two blue pills were ordered during the night, and the soda and ginger powders to be taken every hour. Chicken soup was allowed.

The night was spent without uneasiness, further than from the watery purging, which recurred three times, with the macerated sago appearance, and in the morning with the characters of boiled spinage but extremely thin, indicating bile more copiously, though little decomposed. Some urine also had been voided; the sensation of flatulent movement and distension were abated; and the pulse was 86, full. Ten grains of calomel were administered immediately, and the colocynth pill ordered every hour during the day till six were taken.

Next day, the 11th, feculent stools had distinctly taken place; and he felt no uneasiness save from soreness and tenderness of the gums, in consequence apparently of taking so much opium and so little calomel at the commencement. This, however, was speedily removed by two doses of castor oil in two successive days, and by keeping out of bed.

These cases I have detailed minutely, because the two first were exactly on the verge of collapse; and perhaps the space of three or four hours at most would have made all the difference between tractability and intractability, in the symptoms. Both of them were too far gone to bleed in the large and liberal manner which we were in the habit of doing, when the disease was taken at an earlier stage; and both, nevertheless, must have gone on to collapse without the blood-letting. In the employment of this remedy, I attach great importance to its regulation in such a manner as to relieve and abate the epigastric load; and as I was prevented from effecting this by detracting twenty ounces at once, I had no alternative but to remove it in separate quantities as the strength admitted, and as the symptoms guided me. In open distinct cases, where the vomiting and purging and cramps are violent or frequent, but not of long duration there is no difficulty; for a blood-letting of twenty or twenty-four ounces, followed by ten grains of calomel and half a grain of opium, repeated after six or eight hours, will infallibly remove the disease, if any thing will. So uniform was the success of this method, that both the district surgeons, when called in sufficient time, and the house surgeon, when a case was admitted in the proper stage, invariably employed this remedy; and no case in which it was admissible was lost.

Next to the blood-letting, and the use of calomel and opium, with castor-oil, may be ranked the employment of sinapisms and blisters as means of allaying vomiting, and relieving the internal oppression. For these, however, we had rarely or never occasion in cases which were received sufficiently early to admit of the blood-letting being carried to the requisite extent. After the use of this remedy, the necessary revulsion seemed to be completely effected; and the only use of sinapisms and blisters in cases of this class, was to combat particular symptoms, such as hiccup, or a casual return of vomiting, with irritability of the stomach.

In milder cases, the usual practice which, after many trials, was found to be most successful, was to exhibit, either at once 20 grains of calomel, and one grain of opium, or 10 grains of calomel, and half a grain of the drug, at the interval of one, or two, or three hours, according to the state of the stomach. The general effect of this remedy was, first, to allay the irritability of the stomach, and put a stop to the watery vomiting; and afterwards to suppress the sero-albuminous discharges from the intestinal tube.

In some other cases, where the disease appeared chiefly in the form of frequent profuse watery stools, with weight in the umbilical region, a single blood-letting of 18 or 20 ounces, followed by the thebaic pill, or 30 drops of the sedative liquor, and afterwards an ounce of castor-oil, had the effect of completely removing the disease.

In some cases, whether requiring blood-letting or not, I found the blue pill alone, or combined with the compound colocynth pill, of the utmost utility. The indications for its use are vomiting or hiccup, indicating irritability of the stomach, and the consequent rejection of all other medicines. Its first effect was almost invariably to allay this irritability, and check the vomiting, after which the compound colocynth pill was used. In this way I employed blue pills, not only in the preliminary and vomiting stages of cholera, but in that of reaction, when the intestines were sluggish, and when the great object was to keep up the hepatic action, to allow the vessels of the intestines to recover their lost tone, and to remove morbid secretions.

In two or three cases I tried the effect of a dose of 30 grains of ipecacuan, so as to produce full vomiting, repeated if requisite; and in one case I think with the effect of giving a temporary check to the symptoms; that is, the vomiting and purging ceased for 24 or 36 hours But the pulse still was not satisfactory; there were epigastric weight, heat of skin, and thirst; and two days after violent symptoms of collapse came on suddenly. This case, however, merits attention on another account. I was, in general, however, averse to the experimental employment of agents, the efficacy of which was doubtful, when I possessed for the stage of irritability, in blood-letting and the other adjuvants, remedies so certain in their operation.

In the stage of collapse it is of very little moment what is done; and I have seen reason to conclude, that the less that is done beyond merely applying heat, and keeping the patient warm and quiet, and perhaps attempting revulsion by the counter-irritant powers of the sinapism, the more likely will proper reaction take place. In short, I have come to the conclusion, that in several individuals the system may possess sufficient energy to rally of itself without the interposition of art; and that hence it is extremely difficult, if not almost impossible, to estimate the true efficacy of any given remedy, or any class of remedies. At this conclusion I have not arrived without a considerable number of trials, and without much disappointment and mortification. I had early occasion to recognize the inutility of brandy, whisky, and opium, and indeed all forms of ardent spirits, and what are named the diffusible, as well as the permanent, stimuli. Without seeming to produce any alleviation of vomiting, or abatement of the sero-albuminous purging, these substances only aggravated thirst to an incredible degree, increased the burning sensation at the stomach, augmented headach, and seemed often to induce delirium and maniacal raving. In short, they evidently, when given to the extent in which they were used, augmented the vascular congestion of the different organs, exactly as these liquors do in the healthy subject. The spirituous injections, which at first I thought were beneficial, evidently increased, instead of abating the flocculent discharges. On these accounts, I early abandoned the general use of spirituous *stimuli* in the treatment of choleric cases, in collapse, or proceeding to it; and I trusted either to the frequent exhibition of small quantities of port wine and water in some cases, or to the use of weak chicken soup, as recommended by Sydenham, and to the liberal use of tea, coffee, toast-water, and gruel. I cannot say that I witnessed a single instance of recovery in which spirituous liquors were given to any extent; and, on the contrary, I saw several instances of complete and steady reaction where they were not exhibited. The following case, in which nothing but some port wine diluted with water was given, is one of the most satisfactory I know.

4. On the evening of Saturday the 16th June, Dr Stephen of Portobello requested me to visit a young man, named Marshall, who had been attacked the day before with the usual symptoms of cholera. He was then in a state of complete collapse, the face dingy-coloured, and shrunk; the eyes sunk in the orbits, and almost glazed; the pulse imperceptible at the wrist; the skin of the extremities cold and clammy; intense thirst; and occasionally retching, with scanty discharges of sero-albuminous fluid from the intestines. He had been bled when first seen at seven, and had since that some paregoric, and some calomel and opium. From the miserable nature of the abode of the patient, however, it was deemed expedient to send him to the temporary hospital, which was still understood to be open.

This was a house situate close on the beach; and, as the cholera patients were not allowed to be carried by the public roads, this young man was put in a cart and driven down to the beach, and along this to the hospital, about eight in the evening, when the atmosphere was chilled by an easterly breeze, loaded with the humid particles of the Firth at that season. When the father of the patient arrived at the hospital, he found that establishment shut; and he had no alternative but to drive the young man home again by the same route.

On his return from the hospital, I was requested by Dr Stephen to visit him, to say whether injection by the venous system was expedient. To this proposal, after examining the young man, I was averse; and as I thought he appeared to be rather benefited than injured by his drive, otherwise unavailing, I recommended the use of warm liquors internally; warmth to the surface: that calomel and colocynth should be continued occasionally; and, above all, that small quantities of warm wine and water should be injected, with sulphate of quinine, into the intestines. I thought at this time I could perceive a slight thread of pulse.

Next morning, at seven, when he was seen by Dr Stephen, after frequent vomiting and purging of the usual matters, and cramps during the night, he was so much enfeebled, and seemed still in so hopeless a state, that Dr Stephen soon after wrote me, requesting me to come as soon as possible, and assist him in injecting a saline solution into the veins, which then appeared to be the only chance of recovery. This note did not reach me till twelve; and, in the meantime, Dr Stephen had given the patient wine and water frequently, in small quantities, so that at one, when I saw him, he had taken a pint of port wine, and was so decidedly better, that Dr Stephen agreed with me in thinking that injection was superfluous. The vomiting and the purging were greatly less frequent; the sense of epigastric weight was still present, but palpably abated; and a slight thread of pulse was perceptible at the wrist. The countenance, however, was still dingy and constricted; the eyes were sunk in the orbits; the voice was whispering; and no urine had been voided.

The first thing done was to inject into the intestinal tube six ounces of wine, with an equal quantity of water, and ten grains of sulphate of quinine, and to cause the attendants to apply hot bottles diligently to the back, feet, and between the legs. The vinous and quinine enema was retained an hour and a half, and the patient felt much more strength and comfort than he had done for some time. Exactly two hours after this the enema was repeated, and with the same good effects. He was now decidedly improved; for the vomiting was altogether gone,—the pulse was distinct; the countenance was slightly improved; and even the voice was less suspirious. The eyes were still hollow, and there was no return of urinary secretion. The injection was directed to be repeated next morning, the 18th; and the patient was allowed tea and other warm liquors.

At one on the 18th, I was informed that he was decidedly continuing to improve; that the surface was generally warm; the pulse distinct and good, about 96–100; no headach or giddiness; but that no urine had been passed, and that he had suffered much from hiccup. I recommended the immediate use of carbonate of soda, and, if this did not relieve the hiccup, a blister to the epigastric region; and the use of the turpentine *enema*, with perseverance in the other remedies. On Tuesday the 19th, however, I learned that the hiccup had subsided spontaneously, and that urine was voided in the afternoon of the 18th, and copiously before the morning of the 19th; and from this time convalescence proceeded without interruption.

This case induced me to attach at the time great importance to the vinous and quinine *enemata;* and perhaps they may prove in several instances very beneficial remedies. I have since, however, had occasion to employ them in several cases of collapse without obtaining more from them than temporary suspension of the symptoms. The case of Marshall, indeed, I am more disposed to regard as one of spontaneous recovery; and I believe it is very much to be ascribed to the youth and vigour of the patient.

The collapse of cholera, however, presents several states and symptoms which it is incumbent on the practitioner to combat and alleviate. The epigastric weight and internal heat are best opposed by the sinapism applied to the belly, and repeated according to circumstances; and the same application I found always relieved vomiting and hiccup for a time.

To check the purging, I employed various means; but the one which I found, after many trials, to be best and most effectual, was a small *enema* of four or six ounces of dissolved starch, containing a drachm of sedative liquor or paregoric, repeated every hour, according to its effects. In the administration of *enemata*, I have had occasion to lay down particular rules as to their volume. In all cases where it is the intention to cause the *enema* to be retained, it ought to be as small as possible, four, six, or eight ounces at most, and injected as far up the intestine as possible. If it is larger than the latter quantity, it is so much more likely to be expelled, and will most certainly be returned if it consists, as is too often the case, of one or two pounds of fluid. On this account I often employed mere suppositories.

The pain and frequent recurrence of the cramps were most readily alleviated by injecting into the intestines ten, twelve, or sixteen ounces of warm water, either alone, or with a little sedative liquor or paregoric.

To allay thirst, I began with using water or ptisan acidulated with nitrous acid; but of this the patients soon tired. I then found, after many trials, that the liquors which most perfectly quenched the thirst and quieted the irritation of the stomach were coffee, tea, and weak chicken-soup. For patients who required a stimulus, as well as mere drinks, I found port wine diluted with two parts of water the best. Brandy I never gave, unless in very minute quantities, from my own hands, or those of the house surgeon. The method of giving large and unlimited draughts of cold water, as practised by Dr Shute, I had opportunities of trying in several cases in which the patients were importunate for drink; but it never was attended with the effect of restoration; and I infer, that, where such quantities of fluid are required, it indicates a very severe and unmanageable form of the disease. I must, nevertheless, add, that I never saw any advantage from forbidding patients to quench their thirst freely; and I think the practice of refusing them drink where thirst is so urgent, is only adding most unnecessarily to their sufferings.

5. In several cases I subjected to fair and extensive trial the saline powder recommended by Dr Stevens, but in one only with much and unequivocal advantage. This was the case of Adam Edgar, a man of 40, of alleged intemperate habits, but robust in appearance, who was admitted on the 27th September, with pulse gone at the wrist, frequent vomiting, purging, and cramps, and

the face and extremities cold, clammy, and shrunk. He had a scruple of calomel before admission, with a warm *enema* containing a drachm of sedative liquor. He was ordered a scruple of carbonate of soda every half hour. Next day, he was free from vomiting, and the purging, which had subsided, but again returned, was again checked by an opiate suppository. On the 29th, reaction was complete, with full and natural warmth of surface; but the head exhibited very slight stupor. He refused to allow it to be shaved, as ordered; and the result was, that next day, with a full, strong, and tense pulse at 140, he had complete lethargic oppression of the brain; and, notwithstanding the use of general blood-letting, which he bore well, leeches, cold applications, *enemata* and purgatives, and sinapisms to the legs, he breathed his last in a state of coma on the night of the 1st October. Inspection was not permitted.

I cannot say, however, that this remedy was equally successful in restoring reaction in other cases; and, indeed, it seemed in this stage very much like other agents. If the patient recovered, it was impossible to deny that it was instrumental. But perhaps the same result might have taken place without it, or under any other substance. I shall afterwards advert to the use which I made of one of the ingredients of the saline powder.

The stage of reaction was distinguished by a general congestive state of the vascular system, in which that of the head was generally the first and most prominent object. To counteract this it was a uniform rule to shave the head and apply cold, or to employ leeches or blisters, according as the symptoms seemed to indicate. In several instances I employed general blood-letting; and I have reason to think with good effect. But to this mode of detracting blood, it was a considerable objection, that, though by its means the large and superficial vessels were immediately emptied, it did not follow that we could be quite certain of drawing the blood into these from the deep-seated vessels. Indeed, though the general blood-letting diminished the fulness and tension of the large vessels, it was by no means equally effectual in removing the congestion of the small ones. This remedy, therefore, I confined only to urgent cases; and trusted to leeches, blisters, the cold affusion, warmth to the feet, and the cautious use of several of the diffusible stimuli, to blue pill, and colocynth, or castor oil, as purgatives, and purgative *enemata* containing in general oil of turpentine.

Oppression of the brain and its membranes, however, was not the only congestive state against which we had to contend. An insidious, obstinate, and exceedingly unmanageable pneumobronchial congestion generally came on twenty-four or thirty-six hours after the cerebro-meningeal one; and by its constant interruption to the function of respiration, not only aggravated the whole disorder of the patient, and thereby gave all the other organs a smaller chance of recovery, but, by conjunct *asphyxia* and congestion, gradually and certainly brought him to his final gasp. While inspection proved how little could too often be done for this deep and irreparable lesion, it also showed, that, if any reasonable hope of controlling it could be entertained, that must be in the early stage of its appearance.

When I first witnessed this painful oppression of the respiratory organs in George Cruickshank, my first thought was to attempt to relieve them by detracting blood. But the employment of this measure was contraindicated, it appeared to me, by the consideration, that, however I thus could empty the vascular system, I could not be equally sure of drawing from the lungs the load by which they were oppressed. I therefore limited my measures to the exhibition of antimonials and squill, the use of the diuretic stimulants, and the external application of blisters. Afterwards, however, it occurred to me that a full dose of ipecacuan, so as to induce complete vomiting, might, by its action on the tracheo-bronchial membranes, unload it of the viscid mucus by which it was oppressed. This method succeeded completely with the boy Lauchlan Ross, and partially with Charles Robertson, a boy of 5, in whom also I availed myself of the revulsive power of sinapisms between the shoulders and over the sternum with great temporary benefit.

The management of the alimentary canal during reaction was a task of great delicacy and difficulty. Prone to indulge in errors in diet, and clamorous for food, which they conceived would give them strength, the patients were often themselves the cause either of protracting their recovery, or inducing relapses or the return of disagreeable symptoms. Occasional vomiting, hiccup, pains of the hypochondriac and umbilical regions, distension of the belly, and incapacity to expel the wind from it, were a few of the leading symptoms which frequently, either conjointly or separately, occurred during reaction, and required particular modes of management For the vomiting and hiccup, I generally found a blister applied to the pit of the stomach, or repeated sinapisms, the most useful means. If there were fulness, or congestion, or tenderness in the epigastric region, the local detraction of blood by cupping or leeches was resorted to with benefit. The remedy, however, which I found most uniformly useful, with or without the sinapism, the blister or the local bleeding, according to circumstances, was a powder consisting of fifteen grains of bicarbonate of soda, two grains of nitrate of potass, and three grains of powder of ginger, given every hour, or four times or six times daily, according to its effects, and the abatement or persistence of the symptoms. This combination I was led to use, both in the vomiting stage and in that of reaction, from observing the immense quantity of wind generated in the stomach, and the consequent distension. I had been for years in the habit of prescribing, for various stomach and intestinal complaints, powders consisting of 10, 15, or 20 grains of bicarbonate of soda, five grains of rhubarb, and two grains of ginger, with the effect of first producing temporary relief, and then permanent amelioration; and what was beneficial in one form of gastro-enteric affection, would, I argued, be useful in another, when slightly and suitably modified. With this view, I found, after trying this combination in choleric reaction, that the rhubarb might be advantageously withdrawn, and its place occupied by the nitrate of potass, which might then act on the kidneys; and the sequel will show that I was not altogether disappointed. This combination was employed with the greatest advantage in the cases of Daniel Manson, David Drummond, James Kennedy, Alexander Lake, Ann Hughes, and several others, in whom it not only rectified the action of the alimentary canal, but exerted some influence on the kidneys.

A symptom, or rather sensation, during reaction, which gave much uneasiness, and was truly an indication of *inertia* or *anaisthesia*, loss of power and sensation, in the several parts of the alimentary canal, was a sort of feeling that there was no immediate communication between the stomach and bowels, or that the gastro-duodenal division did not act in unison with the ileo-colic. This symptom, which I ascribed to diminution of the natural tone of the capillary vessels and muscular fibres of the intestinal tube,—the result of previous excessive excitement,—I found most easily removed by the frequent use of purgative injections, generally with from half an ounce to an ounce and a half, or even two ounces, of the volatile oil of turpentine. By the daily use of this measure, the lower part of the intestines was easily relieved of a load of muco-feculent matter, and the intestinal fibres and vessels were allowed gradually to recover their impaired tone. It was remarkable also, that, under the use of this remedy, the uneasy sensations referred to the stomach, as hiccup, distension, or even vomiting, gradually disappeared. The general mode in which I proceeded with this species of treatment, was to give a blue pill, with a colocynth pill, four times daily, and to cause a terebinthinate enema to be administered in the evening, and, if not very efficient, to be repeated on the morning of the ensuing day.

When I first began to treat cases of cholera, it was to me a great source of disappointment and perplexity to observe, that the vomiting and purging might cease permanently, the pulse return, and the skin become warm, but not a drop of urine be secreted; and the patient, whose person then invariably exhaled a urinous odour, might die with all the symptoms of renal *ischuria*. Proceeding in the usual mode of reasoning, the readiest means which occurred to me to restore this important secretion was the employment of diuretics; and the spirit of nitrous ether, nitrate of potass, supertartrate of potass, acetate of potass, and acetate of ammonia, with the spirituous stimulants, were all more or less frequently and liberally used, sometimes with the result of the urine flowing, but much more frequently with no discharge at all, or a scanty temporary secretion. After some reflection on the source of this disappointment, and comparing well the appearance of the kidneys in the dead subject at different periods of the disease with the symptoms during life, and the analogous states of other organs, it appeared to me highly probable, if not quite certain, that the suspension of the urinary secretion was owing to the excessive congestion of the vessels of the kidneys. To remove this, it appeared that the local detraction of blood from a spot as near the situation of these glands as possible ought to be most likely sufficient. In the case of Daniel Manson accordingly, who had with great difficulty rallied from the immediate state of collapse, I first employed this mode of treatment.

6. This patient, whose habits were not very sober or regular, had been admitted on the 5th September. The symptoms of cholera had been completely checked by two doses of ipecacuan of half a drachm each; and under the subsequent use of carbonate of soda to remove flatulence, and blue pill or calomel, with colocynth and the thebaic pill, to restore and regulate the action of the bowels, he was comparatively well on the 9th, when the stools were feculent. On this day, however, another patient had a sudden relapse early in the morning, and died in the evening in a state of perfect collapse. The rapidity of this man's fate struck Manson so impressively, that he felt ill that evening. and next morning (8th,) about three, he was attacked with purging and vomiting; and at half-past nine, when I saw him, his face was marbled blue, his extremities cold and clammy, the voice gone, and his pulse gone at the wrist. By the immediate and assiduous use of opiates, small quantities of brandy, chicken-soup, and calomel, the vomiting was checked, and the pulse was distinct at the wrist in the evening at nine. Next day, though the stools were still flocculent, reaction was commenced, and vomiting had ceased. On the 10th he was, with the exception of a little vomiting, and stools still gelatinous, much better, but there was slight stupor, and heaviness of the head; the person exhaled a distinct urinous smell, and no urine had been voided since early in the morning of the 8th. In short, when, after making no urine for sixty-two hours, he was slipping by sure, but insensible steps, into that hopeless state in which so many of our cases of reaction had expired, I ordered ten leeches to be applied to the region of the kidneys, and a blister to be applied afterwards. This was on the evening of the 10th September; and the blister was applied on the morning of the 11th; and early in the course of that day he voided about eight ounces of urine. He was also getting blue pill and croton oil, varied with calomel and croton oil,

occasionally *enemata* of turpentine; and a mixture of nitrous ether was ordered on the morning of the 11th, which, however, could not, in the course of five or six hours, be expected to restore the action of the kidneys, after it had failed in so many other cases. More urine was voided during the day; and before the morning of the 13th, the secretion was fully, though sparingly, established. From this period Mr Manson improved progressively and steadily, though the inert state of his bowels required the frequent and careful use of the blue pill and colocynth pill, and the turpentine *enemata.*

7. and 8. I now thought I possessed, in the use of local blood-letting and counter-irritation, one means more promising than all the others of restoring the action of the kidneys; and I accordingly employed it in a considerable number of cases of reaction with suppression of the urinary secretion. In the case of the boy Lauchlan Ross, *æt.* 10, it was employed twice, with the effect of producing the discharge of two pounds of urine, after the secretion had been suspended for fifty-two hours at least. In the case of the child Cornelius O'Neil, (*æt.* 3,) who had voided no urine from the night of the 1st October till the afternoon of the 3d, leeches were applied to the region of the kidneys twice, before the secretion began to resume its course.

9. In the case of David Drummond, *æt.* 30, no urine had been voided from the 2d October till the evening of the 4th. The powder consisting of one scruple of carbonate of soda, three grains of nitrate of potass, and two grains of ginger, was freely tried beforehand, partly with the view of relieving the sensation of flatulence, partly with that of operating on the renal circulation. On the 4th, eight leeches were directed to be applied to the region of the kidneys; and in the evening, eight ounces of urine were voided, and about the same quantity on the morning of the 5th. The leeches were repeated: and next day about two pounds of urine were voided; and on the 7th, he was discharging at the rate of four pounds daily. This patient was also subjected about three times daily to the use of the cold affusion.

10. In the case of Kenneth Forbes, *æt.* 52, who was admitted in a pulseless state of collapse, on the 4th October, and had voided no urine since the attack, when some reaction appeared on the evening of the 5th, eight leeches were applied to the renal region; and on the 6th, as no urine had yet appeared, local bleeding was again ordered from the loins by ten leeches, with the administration of a turpentine *enema.* On the 7th, the urine was copious; but he complained of pain and weight in the epigastric region; and, with the view of removing these symptoms, ten ounces of blood were ordered to be drawn from the epigastric region by cupping. This was followed by much relief; and the colocynth pill, with a few ounces of wine, completed the cure.

11. The case of Alexander Lake or Leake, *æt.* 46, was a still more pointed illustration of the benefit of this remedy. This man was admitted on the 22d on the verge of collapse, and all the usual means to avert this state were put in active use without effect. On the 24th, when no urine had been voided since the morning of the

23d, according to his own statement, but more likely since that of the 22d, eight leeches were ordered to the loins, and a little urine was voided that evening, and some dark-coloured turbid urine next morning, At this time he was taking four blue pills, with an equal number of the compound colocynth, daily; and for hiccup, which was distressing, a sinapism, and afterwards a blister, were applied to the epigastrium. The hiccup still continuing, with a recurrence of vomiting of bile, twelve leeches were ordered to the right hypochondriac region; the cold affusion was ordered; and a turpentine *enema* was directed to be administered. Hiccup was abated the following day; and, by the continued use of the blue pill and turpentine *enemata* for a few days more, he was convalescent.

This case was probably one of the most severe, violent, and complicated that recovered from the stage of reaction,—the symptoms of which displayed their true congestive characters in different regions and organs of the frame, conjointly and successively.

My limits will not permit me to enumerate all the cases in which this mode of eliciting the urinary secretion was employed. I shall merely add the following in as little space as possible.

12. Margaret Beatoun, *æt.* 18, admitted September 26, treated by blood-letting and calomel,—did not proceed to complete collapse,—voided no urine since the attack,—was ordered on the 27th *twelve* leeches to the renal region, and during the following night voided urine several times.

13. Mrs Scott, *æt.* 33, attacked on the 30th September with the usual symptoms, admitted on the 1st, had a scruple of calomel and a grain of opium; afterwards, carbonate of soda, nitrate of potass, and ginger,—had pain of the epigastric region, for which eighteen leeches were applied, and voided no urine since the attack. On the 3d, eight leeches were applied; and a little urine followed in the course of five or six hours. On the 4th, they were repeated, and some more was voided; and on the 5th, they were again applied, and the urine then flowed copiously, This woman had also the turpentine *enemata* administered in general once daily.

14. Anne M'Donald, *æt.* 36, after diarrhœa of several days' duration, was attacked on the 17th October with the usual symptoms of cholera, and was proceeding rapidly to collapse, when she was admitted, and treated in the usual mode. Collapse was averted; but she had on the 18th and 19th, a stupid air, with heavy suffused eyes, a lethargic look, and some deafness. She had passed no urine since the 17th. She was ordered *ten* leeches to the loins, an ounce of castor oil, and the cold affusion on the head three times daily. About two hours after the leeches had bled freely the urine was voided copiously. The scalp, however, was still hot, the eyes suffused, and there was slight stupor. The colocynth pill was now ordered, four in the course of the day; and the affusion was repeated as before. The heaviness and suffusion continuing, the head was shaved, a blister applied to the nape of the neck, and

she was ordered two ounces of spirits diluted with four times the quantity of water. Under this treatment she speedily convalesced.

15. A case greatly more tedious and severe was that of Mrs Hughes, æt. 36, who was admitted on the 10th October in a state of complete collapse, with cold surface, dingy constricted features, depressed eyes, surrounded by an areola, and very feeble voice and pulse, which, however, was perceptible, like a small thread, 100 in the minute. The following day, with great thirst, the vomiting and purging continued at intervals; but the skin was more dry and warmer. On the 12th, when the pulse was distinct and beating 100, she had voided no urine, so that for seventy-two hours this secretion had been completely suspended. Six ounces of blood were now directed to be drawn from the loins by cupping; and the powder of carbonate of soda, nitrate of potass, and ginger, was ordered in fifteen grain doses every hour. No urine followed, however; and two blue pills, with one thebaic, were ordered at bed-time; and next morning, two more blue pills, with two colocynth; eight leeches to be applied to the loins, and some green tea occasionally. At nine in the evening some urine had been voided. Next day, though vomiting still continued occasionally, the surface was cold and dry, and the pulse was very weak; urine continued to flow scantily. The blue pill was therefore continued, with the carbonate of soda and ginger; four ounces of wine daily were ordered, and the turpentine enema in the evening. On the 15th, when the pulse was 88, a pound of urine had been passed; and after this, by the occasional use of the cold affusion, she made an excellent recovery.

This case was so unpromising, that a physician who had much experience of cholera in India thought it impossible for the patient to survive; and in this opinion he was not solitary.

In some other cases, this mode of treatment was less successful; and though the detraction of blood from the region of the kidneys was followed by a discharge of urine, the patients did not eventually recover. This occurred in three cases. Helen Haigg, *æt.* 42, a very broken-down miserable subject; Alexander Gordon, a young man, who seemed to sink under the pneumonic or pneumo-bronchial affection; and Charles Robertson, a boy of five, who partially recovered from a bronchial affection, but sunk under the united action of that and the symptoms of cerebro-meningeal congestion. In a fourth case, William Denham, a boy of 8, who was admitted in deep and irrecoverable collapse, who only partially rallied, and who finally sunk under the obstinate form of cerebro-meningeal congestion, urine appeared to be voided once or twice; but the urinous smell of the surface continued to the last. In neither of these cases were we permitted to inspect; but it may be presumed from the result, that some irreparable lesion existed either in the brain or lungs, or both. The child Charles Robertson, was much relieved of the bronchial affection by ipecacuan and antimonials;

and the cold affusion evidently abated the symptoms of cerebro-meningeal affection. But the circumstance of other individuals of the same family having died of symptoms of *hydrencephalus*, showed that little could be expected from any remedies.

The result of these cases, nevertheless, shows that some means may, with reasonable hopes of success, be employed to oppose this formidable symptom. While I cannot hold it up as a remedy that will in all instances remove the renal congestion and restore the natural secretion, I think that in the majority of cases,—that is, ten out of twelve,—in which the system possesses sufficient energy to rally spontaneously, and yet not enough to resist alone the overwhelming congestion of the cerebro-meningeal and pneumo-bronchial vessels, this local depletion may always be used with the hope of restoring the urinary secretion. It was remarkable, indeed, that when it succeeded in this, the head was always less oppressed, and the respiration became more free; and, if the healthy action continued, or was not interrupted, the circulation soon resumed its natural course.

To the employment of this mode of attempting the re-establishment of the urinary secretion, I have already stated, I was led by reflecting on the appearance of the kidneys and their vessels in those who died during reaction, combined with the analogical condition of the vascular system in all the organs. I have also mentioned, that the *papillæ* of the tubular cones always emitted when pressed a thick, milky, opaque fluid, and in one case a bloody fluid. In illustration of the nature of this fluid, and of the pathological state of the urinary secretion, it is highly interesting to remark, that my friend Dr Christison had previously ascertained, that the urine first voided by patients in choleric reaction, is much less dense than natural, and always contains more or less albuminous matter, and that in some instances *urea* is found in the serum. On mentioning to him some time ago the effects of the local depletion and counter-irritation, he communicated to me the experiments by which he had determined this point; and, though these experiments are not so complete as I well know they would have been, had they not been interrupted by a severe and tedious fit of sickness, and afterwards by circumstances over which Dr Christison had no control, they are so precise and satisfactory, so far as they go, that a short abstract of their results cannot fail to be interesting.

Dr Christison examined the density of the serum of the blood in nine cases of patients, three of whom were bled before collapse, two in that state, (John M'Donald and William Melrose,) in one case (James Keir,) after reaction had commenced, and in three in which it is not specified. In all the cases in which blood was drawn during violent symptoms, the density of the serum varied from 1038, which is the lowest, to 1045.5, which is the highest. One is at 1039, two at 1040, one at 1041, and one at 1043. In the man who was bled during reaction it was highest, being 1060.70.

In one case Dr Christison analyzed the blood drawn, and found it to contain less water than healthy blood, by 53 parts in the 1000, but more colouring matter by 29 parts; more albumen and salts by 24 parts; and only about .5, or half a part, in the 1000 more fibrin. The albumen of the serum in the only case examined was 132 in the 1000, or 45.2 more than in health; the saline 11.74.

In three cases in which the serum of the blood was examined after death, it was found to contain *urea* in appreciable quantity; and in the serum of the man bled during reaction, and who had passed only a very little urine from the date of his attack, a very unusual proportion of that principle was found. In three other cases in which blood was drawn, in the one at the commencement of collapse, (John M'Donald,) in another before it appears to have approached, (William Melrose,) and in a third when collapse was far advanced,—the serum, when treated with nitric acid, still afforded distinct crystals of nitrate of *urea*.

In eight cases in which Dr Christison examined the density of the urine, he found it to vary from 1013 or 1015 to 1025, which was the highest observed, and occurred in a patient named Crawfurd, after suppression for the space of two days. In the whole of these cases the urine contained more or less matter coagulable by heat. In all these cases, therefore, the density of the urine is much below the natural standard, which is between 1025 and 1030; and this diminution appears to depend either on the presence of *albumen* instead of *urea*, or on the quantity of the latter being diminished. In this respect, therefore, the state of the urine is very similar to that of persons labouring under renal disease, as orginally described by Dr Bright, and afterwards by Dr Christison and Dr J. Gregory.

This diminished density and albuminous impregnation of urine in choleric patients was established only with regard to the portions first voided after suppression, followed by restoration of the secreting functions of the kidneys. It becomes, therefore, a question, whether it belongs to the reaction of cholera, and the congestive state of the vascular system during that struggle, or belongs to a previously disordered state of the kidneys. The strong argument in favour of the latter idea is the circumstance of so many of the fatal cases presenting more or less disease of these glands. This subject, however, it is unnecessary to pursue further. It is sufficient that I indicate the state of the urine in this stage of the disease, as one which throws some light on the influence of local depletion in restoring the natural action of the kidneys. It connects the treatment with the general fact already established of the efficacy of depletion, general and local, in augmenting the urinary secretion in disease of the kidneys, when that is the cause of dropsical effusion. It is also not unimportant to remark, that two of our convalescents, Mrs Weir and Betsy Taylor, had symptoms of anasarcous effusion, which required in the former case the repeated use of purgatives, and in the other of a large bloodletting, and purgatives, with diuretics, before the swellings gave way, and the urine became natural in quantity.

Notwithstanding the importance, however, which I attach to the employment of this remedy, it is not my intention to represent it as one which never fails. I had myself occasion to witness in three cases its inefficacy in permanently maintaining the renal action; and there is no doubt that it cannot be expected to succeed in every case. It is always indispensable, however, to have recourse to it if the urine continues suppressed for twelve or twenty hours, if there be any reaction whatever; for much of its efficacy depends on having recourse to it early. In its use, also, it is important to attend to the state of the gastro-enteric circulation, the state of the liver, that of the lungs, and that of the brain; and, by the use of remedies directed to each, or which are likely to operate on the circulation generally, to relieve the congestion of the internal vessels.

In the treatment of the stage of reaction, indeed, two objects very much of the same character were to be held in view;—one, to relieve internal congestion, the other to restore the action of the several glands, and that of the skin. For the former, I found local bleeding, sinapisms, and blisters, with the cautious use of such stimuli as diluted wine, diluted nitrous ether, tea, and coffee, most applicable. To fulfil the second indication, I employed the blue pill, and detraction of blood from the hypochondriac region, for restoring the action of the liver; detraction of blood from the loins, and the powder of carbonate of soda and nitrate of potass for that of the kidneys; and for the head and cutaneous circulation generally, the affusion of a stream of cold water on the head and person, alternated with warm fomentations to the feet.

Next to the local detraction of blood from the region of the kidneys, indeed, I think no remedy proved so beneficial as the cold affusion. It was indicated whenever there was heaviness of the head, suffusion of the eyes, much thirst, and a skin warm but rather dry and imperspirable. It always produced temporary clearness of the head, quenched thirst more effectually than any other means, and after two or three repetitions, rarely failed to render the skin moist and comfortably warm. So manifest, indeed, were its effects, that the patients themselves,

who resisted shaving of the head, and had a particular dislike to sinapisms and blisters, submitted to the cold affusion with the greatest readiness. One individual, indeed, David Drummond, *æt.* 20, after he was convalescent and walking about the ward, but who still felt an uneasy fulness and oppression about his head, was in the habit of having recourse to it several times a-day after he ceased to be the object of medical treatment; and he requested the nurse or any patient to pour the water on his head and person two or three times daily till he left the hospital.

Such is a view of the treatment pursued at the Castle-Hill Cholera Hospital in the cases under me during the period of my attendance there from the 5th July to the date of the reduction of the establishment. If I dwell on some parts of it, it is not by reason of any remarkable success which I can claim form the method of treatment; for the disease is of that nature, that, unless taken at the very first, and in subjects otherwise vigorous, it baffles the most rational practice and the most assiduous attention. This was particularly illustrated in the early history of the disease, when only the most wretched and enfeebled subjects were attacked, and when, from prejudice, it was impossible to get them to enter the hospital until all hope was over. Then they appear to have entered almost moribund.

From the first opening of the institution to its final close on the 20th November, the whole cases admitted were 318; the total deaths have been 187; and the total recoveries 131.

Previous to the 5th July, when I entered on duty, the total admissions were 119; the total deaths, 85; the total recoveries, 29. From the 5th July to the 20th November, the total cases were 199; total deaths, 97; total recoveries, 102; thus showing an increase of recoveries above the amount of deaths, which were about one-half of the admissions.

The principal reasons of this abated mortality appear to be the following. In the *first* place, the disease at its second outbreak in July attacked greater numbers of persons, and, consequently, much better constitutions; and the same is true of its numerical augmentation in the end of September, and during the first week of October. *Secondly*, as the disease became more diffused, and continued longer among the populace, their prejudices against the hospitals, the Board, and the medical officers, subsided; and they applied earlier to the district surgeons, and came more readily to the hospitals when first attacked. In the *third* place, by the promptitude and energetic conduct of Mr Taylor and Dr Edgar, our two most assiduous district surgeons, the majority of the cases were sent at much earlier periods than at the early stage of the epidemic. To the exertions of these gentlemen, indeed, the Castle-Hill Hospital owes a large proportion of any utility which it has rendered to the inhabitants of that neighbourhood. And, *lastly*, I think it fair to conclude, that, under the use of local depletion from the region of the kidneys, and the other auxiliaries, during the stage of reaction, for instance, the frequent use of the turpentine *enema*, and the cold affusion, several cases have recovered from this stage, which must otherwise have sunk under it.

Explanation of the Figures.

Fig. 1. Appearance of the agminated glands of Peyer, and the isolated glands, in the adult dead of cholera.

Fig. 2. Appearance of the agminated glands of Peyer in children cut off by cholera.

Fig. 3. Appearance of the patches of the colon described in p. 43.

ART. III.—*Account of the Epidemic Cholera of Kendal.* By THOMAS PROUDFOOT, M. D.

THE malignant cholera having now visited nearly all the principal towns in the kingdom, most medical men have had an opportunity of watching its rise and progress, as well as of proving the effects of the various remedies which, from time to time, have been recommended on scientific principles, and perhaps also some of the other more numerous class, which have been lauded as infallible specifics. Bearing these circumstances in mind, and my residence in a provincial town, along with the many valuable treatises which have appeared, I feel as if some apology was due for writing on a subject which ought by this time to be nearly exhausted. But I have nothing more to offer in way of apology than, that what I have observed has often been at variance with much that has been written.

The malignant cholera was prevalent in Liverpool in the month of May, and at Carlisle on the 14th of June. Kendal is about 72 miles north of the former, and 46 miles south of the latter place. Many people here were therefore in daily expectation that some person, either by the canal, which terminates here from the south, or by some of the many coaches that stop all night in Kendal, or that pass and repass daily from Liverpool to Carlisle, would bring the disease to Kendal:—but very unaccountably, doubtless, to such expectants, the first person seized with malignant cholera here had nothing to do with Liverpool, Carlisle, the canal, or the coaches. We, however, had observed, particularly among the patients at the Dispensary, an increasing and unusual irritability of the mucous membrane of the stomach and bowels, with some smart cases of diarrhœa, which induced us to believe, that ere long we should naturally be involved in the vortex of the reigning epidemic, and therefore did not look for its arrival either *per* canal, or *per* coach.

John Atkinson, a mason, 22 years of age, had been repairing a farm-house about six miles south of this, but returned home to Kendal on Saturday evening the 30th of June. He did not stay all night at his father's house, as he ought to have done;—but "spent the night *somewhere*, with some of his companions." He, however, returned to his father's house on Sunday evening. According to his mother's account, he had been of late "rather outward," but was not then intoxicated. On the morning of the 2d of July, about four o'clock, he was seized with vomiting and purging, which has been described as excessive. At one o'clock P. M. a medical man was called to his assistance, who found that the matter which he had vomited and purged resembled rice-water. The patient complained of violent pains in his arms and legs; his skin was covered with a cold perspiration; it was also corrugated on the fingers, and of a blue colour, particularly around the eyes, which were sunk in their sockets; his pulse was imperceptible; his voice weak; and he had not voided urine since the commencement of the attack.

He got calomel, laudanum, ammonia, and camphor; but died at nine o'clock in the evening.

Margaret Atkinson, aged two years and a-half, niece to John Atkinson, and living in the same house in which he died, had just recovered from the measles, but wandered out on the 2d of July; lost herself, and was found crying about a mile from home, by a woman, who ascertained her name, and from whence she came. The girl had a piece of flannel about her throat, and appeared sickly, which induced the woman, who was the mother of a family, to examine her tongue, which she has informed us was white and foul. She was restored to her family; and at four o'clock P. M. on the 3d, was seized with vomiting, purging, &c. accompanied with unusual coldness and blueness of the surface of the body, similar to her uncle; but as means were used to restore the child to health, reaction took place, along with other appearances of amendment; the vomiting and purging abated; and the medical man, as yet having had no experience, except in the case of the uncle, in *cholera asphyxia*, suspicion was lulled a little, though he very properly reported these ominous circumstances to the chief magistrate. Meetings were held by some of the principal inhabitants, and a few of the medical men, when the usual difference of opinion occurred as to the nature of the cases, and the measures most proper to be adopted on the occasion.

On Thursday the 5th of July, another young man, also of intemperate habits, but wholly unconnected with, and living at a considerable distance from, the two former patients, was seized with symptoms of cholera, and died on the morning of the 6th of July, about ten hours after he was first seen by his medical attendant.

On the same evening, George Fallofield, aged 57, a weaver by trade, and with a constitution shattered and broken by late indisposition, and a long course of intemperance, residing quite at a different part of the town from any of the other persons yet mentioned,* with whom he had no connection, either directly or indirectly, was seized with symptoms of cholera, and died on the following day.

The body was examined after death, and appearances were found, such as have been described as usually met with in the bodies of those who have died of cholera.

On the 7th of July, I was called to visit a child two years of age, of the name of Atkinson, residing in the Woolpack-yard, who had been seized on the preceding night with vomiting and purging, along with unusual symptoms of mortal weakness, and failure of the powers of life. On entering the dwelling, where the child lay in a crib by the side of the fire, an impression was made, which cannot be easily erased from our memory. The surface of the body was of a dark livid colour, especially about the eyes, which had receded, as it were, to the extreme bottoms of their sockets; the features had an inanimate statue-like appearance, such as we have observed in one of the apparently least violent, but most certainly fatal, forms of yellow fever, when the disorganization of the stomach is going on, and when the stomach and upper bowels become, as it were, the outlet for all the fluids of the body, somewhat like the disease under consideration. The features of this child were more like those of a person in old age, than the countenance of a child. On examination, the surface of the body was unusually cold, and covered with glutinous sweat, notwithstanding that the day was excessively hot, and that there was also a fire in the apartment. This feeling of coldness observed in choleric patients has been compared not inaptly to the sensation communicated to the touch by marble, standing in an unoccupied apartment in warm weather; and, when once felt, can scarcely ever be mistaken. The pulse and respiration were scarcely perceptible, and when, with minute attention, the breath could be distinguished, it too felt unnaturally cold, as did also the tongue, which was of a greyish-yellow colour, but not particularly loaded or foul. The coating was more general than remarkably thick. Had it not been for an occasional twitching of the extremities, the child might truly have been considered a "living corpse." The matter vomited and purged was of a white curdly appearance, unmixed apparently with bile or feces, and excessive in quantity. The mother could give no account about its voiding or not voiding, urine. This was as complete a case of malignant cholera as we have yet seen, after four months' daily experience. Cordials and stimulants were given, and, by the force and power of the vapour-bath, the surface of the body was raised in temperature. Although we cannot say that heat was brought to the surface of the body from within outwards, still reaction could not properly be restored, and the child died in eleven hours from the beginning of the collapse, and six from receiving medical aid.

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* This case was No. 3 in the accompanying plan of the town, being the third house in which the disease appeared.

On returning from visiting this child, we stated to some persons who were anxious to know our opinion as to the nature of the disease, that it was a case of spasmodic, or Asiatic cholera; and farther added, that, had we not been aware that such a disease had yet appeared in Europe, or had we even considered its appearance till then quite improbable, we would either have made the same declaration, or at once have admitted that it was a case, the intimate nature of which we did not thoroughly understand. So singularly striking and peculiar are the features of this remarkable disease, and so dissimilar to any other with which we are acquainted, excepting the particular form of yellow fever already alluded to, which we do not believe could occur in the temperature of this country.

The existence of spasmodic cholera in the town was formally and confidently announced to the principal magistrate. Meeting was held after meeting by the inhabitants, and some things were done unadvisedly, which tended much to embarrass the proceedings of a board of health that was afterwards appointed in the usual way; but only three slight cases occurring during the following week,—one of which, however, afterwards terminated fatally,—many persons of influence strenuously asserted that no case of spasmodic or Asiatic cholera had yet occurred here. In this they were joined by some of the leading medical men; and the assertion, owing to the slow progress of the epidemic, was maintained for several weeks, or even months, with a degree of ingenuity and pertinacity deserving of a better cause. At one of these meetings, it was suggested that it had been rather hastily concluded that the Asiatic cholera had reached here, when Dr Daun, who it was gravely stated had seen the disease in St Petersburgh, took a fortnight to recognize it in Sunderland after his arrival for that express purpose. It being announced, however, that it was not to Dr Daun that we were indebted for much of our information about the cholera in St Petersburgh, but to Drs Russell and Barry, and farther, that Dr Daun had acquired his knowledge of the disease in India, and had probably never been in Russia, an impression was given, that the individual who made this suggestion was but imperfectly acquainted with the history of the disease. The individuals assembled were therefore relieved from any farther remarks from this quarter.

On the morning of the 14th of July, we were called in consultation to John Atkinson, the father of the child who had died of cholera just a week before. He was in a complete state of collapse, and died in less than three hours afterwards. When the child died, we impressively warned and exhorted this family, consisting of the father, mother, and three children, that the most particular attention ought to be paid by them to any illness, especially to looseness of the bowels, and that care ought to be taken, in that event, to send instantly for medical advice. It was, therefore, with much regret and disappointment, we were apprized that this warning had been wholly neglected, from the mischievous persuasion, that no case of Asiatic cholera had yet occurred here. It appeared that he had laboured under a severe bowel complaint on the preceding day; but so regardless had he been of the advice, and so little had he cared about the diarrhœa, that he went out in the evening to see Mr Green, who happened to be here at the time, ascend in his baloon. At eight o'clock he came home so very ill, that he sent for some brandy, which he took, and went immediately to bed. At midnight he was seized with vomiting for the first time, and the diarrhœa became most profuse. He got more brandy, and at two o'clock sent for medical assistance. The vomiting and purging ceased at four o'clock, apparently by the use of opiates and astringents; but which is, we now know, frequently the case under similar circumstances, without any such means being used. We saw him at nine for the first time, and he died before noon.

I must here observe that this man was not related to the Atkinson who died on the 2d of July, nor had he any intercourse with any of his relatives. This was an industrious sober man, 37 years of age, and fell a victim to the epidemic, from living in a foul and most pestiferous habitation. The house where this family resided was one of the most unwholesome that can well be imagined. There was a sewer, or receptacle for filth and sludge, upwards of a foot deep, standing above the level of a damp earthen floor. The house was extremely small, and narrow, and had a nuisance at the back, similar to the one in front. Exclusive of the small damp unwholesome apartment, on entering, where the family cooked their food, there was a still smaller dark unventilated apartment, only capable of containing a bed, where this poor man died, and where the walls, at the time, were covered with drops of water, that had oozed out even in the middle of summer. On mentioning to the widow, that it was probably owing to the damp and unwholesome situation that she had lost her husband and child, she entirely concurred in this opinion, and stated, that she had lost two children in it before. The house was so damp, that it had rotted and spoiled every thing she had, even to the very cords of the bed. She accordingly left it in a week afterwards. It may be considered that we have been too tedious in our description of this residence; but, exclusive of showing that the epidemic arose spontaneously here, as well as in other parts of the town, it will appear that we have more to say about this abode by-and-by.

This was the seventh death that had taken place, in five houses, since the commencement of the epidemic; but as the inmates of these separate houses had no intercourse, but resided in different parts of the town, and at considerable distances from each other, the notion being, that the Asiatic cholera, as it was improperly called, must necessarily be brought to the town from an infected district, and not arise spontaneously, as all acknowledged this had done; still it was not allowed even after this man's death, by the opponents of truth, that there was an unusual disease amongst us. The next place where the cholera broke out was in Robinson's Yard. (No. 6 in the chart.) There could no account be given at the time how it commenced here, more than in the places where it had already occurred. The inhabitants were not related to, nor had they had any known communication, either directly or indirectly, with those previously affected. The disease, however, clung to this place with a tenaciousness which comported with the preconceived notions of many persons about infection; and at length, after the occurrence of several deaths in this locality, it was generally admitted, that the existence of malignant cholera was not any longer to be denied. Two persons residing in different houses, in Stramongate, (No. 5 in the chart) were seized with cholera, and both died; but not a case has yet occurred in either of the families to which they belonged, and only four cases have since occurred in this very large street during the space of nearly five months.

In Robinson's yard, the receptacles of filth were horrible, almost beyond description; and as twenty persons were seized and six died here out of a population of ninety-six individuals, soon after the commencement of the epidemic, the circumstance has very generally been cited here as conclusive of the infectious nature of the disease. It seems, therefore, necessary to give some description of the locality, to enable every one to judge whether the disease was introduced by infection, which no one could prove, or if it was not a place sufficiently filthy, and consequently insalubrious, along with the epidemic influence of the atmosphere, to account for all that took place in it. This yard consists of two rows of houses, each two stories high, running westward from the main steeet, but entered by an arch, and distant only about twelve feet from each other, with a dilapidated stone wall between them, the harbourage of much filth and dirt. There was a pump-well about two-thirds up the yard, from whence the inhabitants derived their supply of water, which, to the natural uncleanness of the place, gave an abundant supply of moisture. Proceeding westward, it may easily be conceived, that even the space between the two rows of houses might admit of ventilation, by currents of air sweeping the place; but at the west and higher end the two rows of houses are joined together by privies. At the upper end of the southern row, on the groundfloor of the last house, there was a dunghill of the most revolting description; yet over this accumulation of impurities dwelt a family. It suffered from cholera.—From the dunghill and privies there is every reason to believe that moisture percolated the earth, and vitiated the water in the well, as they were more elevated, and consequently the moisture, except by evaporation, could escape in no other direction. The water, moreover, seemed impure, and was nauseous to the taste.

I am quite aware I am treating of circumstances connected with an epidemic which has visited the remotest parts of India and China,—traversed the greatest part of Europe,—and which has at length commenced its ravages in both the northern and southern hemispheres of the new world. It at present prevails in North America, and, we believe from newspaper reports, in Chili. It may appear quite ridiculous, then, to mention dunghills and privies in Kendal, with reference to such a subject; and of this I feel the full force; but having assigned to myself the humble task of drawing up a report, I am bound to be faithful. The history of this remarkable epidemic can be completed only by the united efforts of many observers, and no proposition, however ably demonstrated, can be considered an established truth, till it has been repeatedly verified by the testimony of many inquirers.

We do not assert that such nuisances produce or give rise to cholera. It is merely contended, that, during the epidemic influence of the atmosphere, such places as have been described are severely visited, giving the disease the semblance of possessing infectious properties, which do not belong to it; while its greater prevalence is really owing to impure locality, as is proved by others more favourably situated being more gently visited, or entirely escaping.

On the 17th of July there was a public meeting, at which the persons that were to compose the Board of Health were nominated; and, as already stated, it was generally admitted that the epidemic disease was actually in the town. This gave the medical men who believed in the existence of the disease here a sanction, as it were, to note every case; and when the Board met on the 24th of July, there were 49 cases and 14 deaths reported; but so slowly did the epidemic advance, that the whole number of cases only amounted to 55 on the 21st of August. On that day three new cases occurred, at opposite extremities of the town, nearly a mile distant from each other, viz. one at Cross Back, one at Dockray cottages, and the other at the head of French-law, (these are marked, No. 9, 10, and 11 in the chart,) which terminated fatally, in about seven hours from the time the medical man was called in. The fluid discharged by vomiting and purging was in this instance enormous, and entirely devoid of bile or feces. The child had, however, laboured under a diarrhœa the preceding day, which had washed away a large worm; and, accordingly, the opponents of truth laid hold of this, and maintained that it had not died of cholera, but of the worms.

On the 22d of August, a poor family, consisting of a man and wife with six children, went to inhabit the dwelling in the Wool-pack Yard, about which so much has been said, and in which a child died on the 6th, and its father on the 14th of July. During the night, the father, mother, and two of the children were seized with violent vomiting, purging, and cramps, &c. They were promptly attended to, and the father and one of the children were convalescent in three days, and the other child in three days more; but the mother suffered from consecutive fever, and was not discharged till the 9th of September. This was a circumstance considered by some persons to be again quite conclusive as to the disease possessing infectious properties; while those medical men, who denied the existence of epidemic cholera, asserted that the father had taken and given to his own family a mixture of jalap and tobacco in ale, in order to impose on the parish officers and others. But if we take into account that the widow Atkinson, with three children, resided in this house seven days after her husband's death with impunity, during which period it was well cleansed and fumigated with chloride of lime, along with the suddenness of the seizure, only a few hours after entering it, we can scarcely help coming to the conclusion, that the indisposition of the four members of this family arose from the foul air engendered during the period the house was unoccupied, and that infection had nothing to do with the matter.

From the 24th of July to the 12th of August, only six new cases were reported; and from the latter period till the three cases on the 21st of August, there was none; and this might be at first sight supposed to have originated solely from the fact, that none had in reality occurred. For this, however, there were other reasons. The epidemic fortunately made little progress; and this was eagerly taken advantage of by such as erroneously maintained, that there never had been a single case of malignant cholera in the town; and as some of the medical men, as already stated, joined in this sentiment, and others overawed, either concealed, or chose to talk about English cholera; we hence learn how it happened that there were so few cases reported, all of which, however, proved fatal, as well as the first of the three that occurred on the 21st, making seven fatal cases in succession. Of the eleven first cases nine died; of the next thirty-eight cases only five died. These circumstances are not uninstructive, and clearly show the prevalence of the epidemic, when every case was noted, and the remarkable nature of the disease; as well as the influence of public opinion, or rather clamour on the conduct and independence of some of those who furnished the reports.

When the four individuals in one family were seized, the Board of Health were induced to apply to the churchwardens and overseers of the poor for leave to occupy with cholera patients a house of recovery that had been built about four years ago, but on a site which, by some unaccountable oversight on the part of the inhabitants, placed it under the control of this humane body. The house of recovery was unoccupied, and indeed never had been used. It was, therefore, much to the surprise of the Board of Health, when their secretary received in reply to their application, a note stating, that " no cholera patient will be allowed to enter the walls of that place," &c. &c. The house of recovery is accordingly unoccupied still, and is likely to remain so for ever for ought that we know, or can discern. About this period a most arbitrary and absurd distinction was attempted to be made between the malignant and indigenous cholera, which deserves some notice. It was vehemently maintained, as error usually is, that, whenever a cholera patient, either at the commencement, or during the progress of the disease, passed bile by vomiting or purging, this was infallibly distinctive of indigenous cholera, and *vice versa*. So far was this fancy of the brain, this mere splitting of a straw, carried, that, in the instance of a father and child both lying dead in the same house, and another child in the most hopeless state of collapse, it was, with all due assurance, and much becoming solemnity maintained, that the one child had died, and the other now laboured under Asiatic cholera, while the father's had only been a case of English cholera, because during the illness of eight days bile had *once* been undoubtedly detected in the dejections. When we heard of this decision, being ignorant of the delusion on which it was founded, we were lost in amazement at the judgment and acuteness that could arrive at a nicety of distinction, which, without embellishment, appeared to cast completely into the shade, the noted discrimination of the wine-tasters of Cervantes.

The characteristic symptoms are now so generally known as to render it quite unnecessary to dwell on them at length. It is a disease, when once seen in its genuine and exquisite form, which can never afterwards be mistaken for any other disease whatever. Yet on a first visitation it was to be expected that some variety of opinion, as well as some misapprehension, from want of proper information, would exist as to the pathognomonic symptoms. There is no one symptom invariably present in malignant cholera, nor are the whole of the symptoms that have been observed ever seen either together, or pursuantly or successively in the same individual; and although the absence of bile and feces in the evacuations is generally acknowledged, still it must be quite familiar to every one who has attended minutely to the phenomena of the disease, that there are many exceptions to this rule, and that it is in certain stages of the disease only when the bile ceases to flow—when the dejectious become profuse, and in the stage of collapse when all the other secretions are suspended, as well as the bile, or superseded by the enormous secretion from the mucous membrane of the stomach and small intestines. When reaction takes place, we have, in accordance with the observations of others, noted the bile to flow generally in great, and sometimes even in enormous, quantities, evidently of a vicious quality and an unusual appearance. The dejections are often in this stage of a sea-green colour, and often, too, the stools are particularly black and pitchy from an admixture of blood with the feces; but on turning the vessel we have seen bile adhering to its surface of the strongest and deepest saffron colour, the whole more resembling the excrement and bile of the ox than that of the human subject,—the discharges dying and staining the bedclothes and linen, wherever they touched, in a way quite remarkable. It has often been stated that the deficiency of bile arose from a spasmodic constriction of the biliary duct; but this we believe to be seldom the cause of the deficiency, and therefore to be generally erroneous. When bile is wanting in the fluids discharged by vomiting and purging, the other secretions are, as already stated, either nearly or altogether suspended, for there are various degrees of intensity or severity; and it now appears an acknowledged fact, that the fluid poured out from the inner surface of the stomach and intestines often not only supersedes all the other secretions and excretions, but becomes so excessive as to drain the blood of the fluid part which held its component parts in solution, and maintained its due proportions. The spasms are, moreover, often wanting, especially in children; and in a great many instances which we have seen they were chiefly confined to the fingers and toes, and never extended to the trunk of the body. We have occasionally, too, observed the spasms severe, and attacking the trunk of the body, when the biliary duct was most likely to be involved; and yet bile was found in the evacuations.

If, then, there is not one of the symptoms of the epidemic cholera that is not occasionally wanting, there is farther not one of them that is not frequently met with in other diseases; and in some cases of poisoning, and in the common cholera of this country, the symptoms are so similar to those of malignant cholera as to render diagnosis at first sight often extremely difficult, if not sometimes altogether impossible.

We would observe on this subject, that it is the assemblage of symptoms, the relation or succession, and proportion, with respect to intensity and duration, which the symptoms bear towards each other,—the grouping, colouring, and shading, if we may be allowed such expressions, which fill up the picture in the mind's eye, and not any one taken singly, which enables us to recognize the disease. If, for example, the external appearance of a race-horse and a draught-horse were described to an individual who had never seen either, it would be doubtful and difficult, even with very felicitous powers of description, on the part of the writer, and acute apprehension on that of the inquirer, to convey to the latter a very distinct notion of the great difference between the two animals; and the effect would be still less successful in a mere descriptive comparison between the race-horse and the hunter. But place even the two latter animals before the novice in juxtaposition, and at the first glance the difference would appear to him to be immense. At least, after much reading, on seeing a case for the first time, the impression was somewhat analogous to what has been supposed.

In order to prevent any misconception with respect to the nature of the cases to be included in the reports to the Central Board, it has been stated by authority, "that by the word cholera is to be understood a disease characterized by the following symptoms.

"A purging and vomiting of fluids, neither feculent nor bilious, with cramps and prostration, to which, in extreme cases, or at a more advanced stage, are added, a coldness and shrinking and lividity of the surface, particularly of the extremities, with suspended pulsation at the wrist and suppression of urine."

"It must not, however, be supposed, that the whole of these symptoms will be found in each, even of the most extreme cases; for one or more of them are sometimes altogether absent, or so feebly marked, perhaps, as not to attract particular notice. This is more especially the case in respect of young children, in whom, for instance, cramps have hitherto been but seldom observed in this country as a well-marked symptom of cholera."

The disease has generally begun here in the form of a bilious diarrhœa, and as it advanced, the proportions of the bile and feces to the whole quantity evacuated have gradually become less and less, till wholly indiscernible. It is generally only during the stages of profuse evacuation, and of collapse, that their absence is especially marked, and the latter is perhaps the only stage in which the disease can be almost infallibly distinguished from every other; yet, during this stage, we have frequently seen traces of bile and feces. In some of the worst forms of the disease, we believe the vital functions have become all at once so paralyzed, and especially the action of the heart, that life has become extinct sometimes after very little, or even without any, evacuation whatever; but we have never seen a case of this kind, and therefore are inclined to consider it a rare occurrence. Some observers have affected to attach little importance to the fluids discharged, partly, perhaps, in consequence of this occasional absence in the worst cases, and farther, because the danger is by no means averted when they have been suspended by medicine, or have ceased spontaneously. But according to what we have seen, the shrinking and shrivelling of the surface of the body—the remarkable diminution of bulk—the coldness and lividity—the weak or imperceptible pulse, along with that extreme prostration of strength, mortal weakness; in other words, the completeness of the stage of collapse, and the consequent danger, have usually borne a marked proportion to the comparative moderation or superabundance of the fluids evacuated. The reappearance of bile in the evacuations must always be considered a favourable symptom, although we liked still better to see a copious secretion of urine.

The various theories which have been founded on the interrupted secretion of bile, being the very *essence* of malignant cholera, by the late Dr Good and others, undoubtedly limit and confine the disease far within its natural range. Such views, however beneficial the practice may be to which they lead, are equally at variance with the phenomena that occur in it, the appearances on dissection, and all our notions of the general pathology of febrile diseases into which malignant cholera frequently degenerates. When the system begins to react, the danger is by no means over; indeed, nearly one-third of our deaths happened in the febrile stage of the disease; not that the symptoms ran high, as dangerous febrile affections are often said to do, but apparently from the system having suffered irreparable injury during the two preceding stages, viz. of copious evacuation and of collapse. The feeble action of the heart, and the preternatural quantity of the fixed matter of the blood favouring dangerous congestions in the soft spongy organs, and especially, from the peculiarity of its circulation, in the brain, which, in addition to the usual disturbance from congestion, perhaps suffers also from a species of local poisoning, in consequence of the unnatural state of the blood. The injury to the stomach and intestines, too, observed in the few inspections at which we have been present, showed by their blanched and pulpy state, in some places, along with congestions and abrasions, or ulcers in others, how extensively they had suffered when the disease continued so long as to admit of such changes. Of the injected or inflamed state of the abdominal nerves we can say nothing from dissection,—indeed our opportunities have been too few to enable us to speak with confidence and propriety on the morbid appearances.

Out of 171 reported cases, about 142 of which we saw and examined, there were only four that had not had the premonitory symptoms. We have heard that of about thirty which we did not see, there were three or four similar cases, making in all seven cases, which had not the warning symptoms. But, exclusive of the acknowledged and reported cases, we are certain we do not exaggerate when we farther state, that we have seen at least as great a number labouring under the premonitory symptoms that underwent treatment, and of which no report was made. Farther, we have not seen a single case, carefully and judiciously treated previous to the stage of collapse, where the disease has not either been arrested, or so beneficially tempered, as to terminate favourably; and these are the most consolatory remarks which we have to make about this epidemic. These statements are not made at random, and without a perfect knowledge that they are much at variance with what has happened in some other places. But having been appointed by the Board of Health to visit all the cases that might occur, I had an opportunity of often meeting with the premonitory cases, and of personally ascertaining the very satisfactory and important truth which I have now communicated.

All the cases which occurred, except the number already specified, were preceded by a diarrhœa of longer or shorter duration. On inquiry, we frequently found that it had been of four, five, six, eight, or even of as long standing as ten days, during which the patient had either disregarded it altogether, or had taken some popular or domestic remedy, such as brandy and laudanum, or tincture of rhubarb, &c. not considering it necessary to apply for medical advice, from having often had far severer attacks, according to their own accounts, which abated without any such troublesome and costly assistance. In general the diarrhœa did not continue more than two or three days ere the stage of rice water dejections came on, which, unless arrested, was followed sooner or later, according to the profuseness of the evacuations, by collapse. Before this frightful conjuncture arrives, our experience leads us to place great confidence in judicious medical treatment, as previously stated; and we are persuaded that he who is most zealous and unremitting in procuring patients in this early stage, has made the greatest discovery as to disarming and stripping the complaint of its violence that we are yet acquainted with.

To do all the good possible, however, it is necessary to appoint medical inspectors to the different wards of a city, and absolutely search for the incipient cases in obscure dwellings, which we believe has seldom been the case. Happily for us, and for the inhabitants in the town in which we reside, the cases have been too few to enable us to draw general conclusions from them, except in regard to the weakness or absence of the infectious principle; and we think that the length of time which the epidemic has prevailed here, along with the slowness of its progress, and the compass of the town enabling us to note every circumstance which happened, or in any way had reference to it, entitle the remarks bearing on the feebleness, or total absence of infection, to some consideration. But even on this point we will not only acknowledge the total insufficiency of the facts observed to settle such a momentous question, but farther confess, that they are insignificant in reference to the vast magnitude and paramount import of the subject, and valueless unless they are found to be in keeping with the observations of others still more favourably situated for pursuing such investigations.

The malignant cholera is undoubtedly more modified by *relative soundness and strength of constitution* than some other epidemic diseases, as, for instance, the yellow fever, which attacks the robust more readily than those who have been debilitated by climate, and have lost their susceptibility, or have been seasoned, as the phrase goes.—Cholera, on the other hand, has been characterized in its progress here in a most remarkable manner, indeed, by its attacking the intemperate, the old and infirm, and poor half-clothed, half-starved children. Limited as our numbers have happily been, we can enumerate among its victims many drunkards, some worn-out prostitutes—a rag-gatherer;—but lest this should be reckoned to savour of infection we beg to state, that she had not of late followed her trade; a forlorn woman whose husband had run off, and left her with a helpless family—in short, the poorest of the poor, and the lowest of the low—the very odds and ends of society.

During the period that the malignant cholera prevailed here, we would observe, that a great many persons suffered from derangement of the digestive organs, accompanied now and then with nausea, vomiting, and diarrhœa. On this subject we scarcely know how to express ourselves, in order distinctly to convey our meaning, and the precise truth. Perhaps it will be more correctly understood, by stating, that there was scarcely any person whatever quite well—that did not in some shape or other suffer from lowness of spirits, drowsiness, headach, languor, lassitude, nightmare, acidity, flatulence, or indigestion, accompanied occasionally with nausea, bowel-complaint, and cramps—or in some of the innumerable ways in which persons feel, when they cannot tell what is the matter with them, and are not so much indisposed as to be entirely confined to bed.

These circumstances, we conceive, show most emphatically the influence that the *relative soundness and strength of constitution* possesses, in warding off the complete developement of the disease; for doubtless almost all were at one time or other under the noxious operation of the epidemic constitution of the atmosphere. Yet there was not a single instance of an individual in the higher or middle ranks of society, or even amongst the shop-keepers or tradesmen, had the disease in its exquisite or characteristic form, except in one family. This exception deserves some notice, and we think admits of a satisfactory explanation. It was early in the epidemic, about the middle of July. The cottage in which this family resided was situate on the side, or rather near the foot, of a steep eminence; a situation at all times favourable to the concentration of terrestrial emanations, as is well known to every one who has had experience, or has in the slightest degree attended to the history of diseases of miasmatic origin in warm or tropical climates. Besides the situation, however, the cottage was buried with trees, shrubs, and flowers, even up to the very windows. There was no thorough ventilation, and amidst this flower-garden of great extent, the atmosphere was constantly loaded at this time of the year with the scent of flowers, even to sickliness. Hence we believe was the cause of the illness. The family, consisting of five persons, had all in a mild degree, symptoms of the epidemic; two very slightly; other two to the usual symptoms suffered from cramps; and the fifth had much sinking, accompanied with coldness and lividity of the surface of the body,—in other words, went through the stage of collapse, had the consecutive fever, and completely recovered. The residence of this family being in the country, and the sickness in it happening before any report was made to the Central Board, they are not included in the return at the end of this paper.

The circumstance was considered deserving of notice, from the influence that a residence, apparently one of the most delightful in this country, had in producing the disease when it was not otherwise to have been expected.

The epidemic proceeded thus. On the 2d of August, exactly one month from its commencement, we had fifty cases and fourteen deaths; on the 1st of September sixty-five cases and twenty-two deaths; on the 1st of October, 106 cases and forty-three deaths. The last case admitted on the register was on the 30th of October, when there had been 171 cases; and on the 14th of November, when the last patient was discharged, there had been in all sixty-nine deaths. The seizures happened in the course of four months; but it was the 14th of November ere the whole were discharged.

It is abundantly manifest that, whether malignant cholera arises spontaneously, or is propagated by infection, or prevails and extends in both ways, an effect is produced on or in the system some time before the developement of the disease, by something noxious and subversive of good health. It has been supposed that a diminution of the power of the whole nervous system, and especially the ganglionic system of nerves, was the first step in the coming on of those processes that are subversive of health,—and, indeed, most writers who have attempted to account for the phenomena that take place in it, have dwelt more or less on the whole or on parts of this subject. By this diminution of nervous energy, it is assumed that we have an ample and satisfactory explanation of the lungs thereby becoming unable to draw from the atmospherical air, consequently incapable of purifying the blood by giving out its carbon,—the black blood thereby enfeebling the action of the heart,—the liver, the kidneys, the stomach, and intestines, &c. It is obvious that when the blood ceases to be renovated in the lungs, and that when the secretions, particularly those of the urine and bile cease also, the blood must become tainted or decomposed, which it has been fancied leads to an explanation of all the symptoms observed in the course of the disease.

Others have conceived, that, in addition to the diminution of nervous energy, and consequent deterioration of the blood by its imperfect purification in the lungs, along with its retaining, in whole or in part, what was formerly carried off by the liver and kidneys, a spasm to take place in the extreme vessels on the surface of the body, by which the blood is violently thrown on the internal organs,—exciting or producing inflammation in the abdominal nerves; and that such an impulse is given to the stomach and bowels, or such a concentration of the nervous and circulating systems take place in this vicinity, that inordinate action is produced, from which, and from the deteriorated or decomposed state of the blood, result the rice-water like or serous evacuations, which constitute such a characteristic feature in this disease.

We readily grant there is much that is rational in this view of the subject, and many of the phenomena do doubtless take place somewhat in the manner set forth. But without entering deeply into it, which would not be consistent with the limits assigned to this paper, we have to remark, that this diminution of the energy of the nervous system, and especially of the ganglionic nerves, must often have taken place, from various causes, long before malignant cholera attracted so much notice. Consequently we are forced to acknowledge either that there is now something in the external open atmosphere that never manifested itself before, at least in Europe, in the production of cholera, or that cholera is an infectious disease. In either case, then, we contend, that the blood must be tainted, but are induced to ascribe a less conspicuous part to the inflammatory spasm of the ganglionic nerves, than to the general effects of a change produced, especially on the assimilative organs, the heart, and the nervous system, from this altered state of the blood.

Whether the disease arises spontaneously, or is produced solely by infection, or whether it generally arises spontaneously from an epidemic constitution, or unknown state of the atmosphere, and is under particular circumstances propagated by contagion, it appears obvious, that a deleterious effect is produced in the system, which must take place either through the skin, the lungs, or the alimentary canal, or the general health may be affected by the choleric miasma, poison, or infection, entering the system in all the three ways. But it seems by far the most probable, that the poison chiefly enters the system through the attenuated and permeable surface of the lungs, and gradually or rapidly, according to its virulence and other circumstances, produces a change in the mass of the blood; as there are few known substances which produce violent effects on the human body, which act without in some way or other entering the circulation. Hydrocyanic acid and the nux vomica, or rather the plants containing *strychnia*, are almost the only substances which act with such amazing rapidity, as to induce a belief that they do not enter the blood but act through the nerves alone.

Since the disease prevails at every period of the year, and in every variety of temperature, and without appearing to be much influenced by atmospherical vicissitude, by which the pores of the body are either open or shut, relaxed or constringed, it would appear that the surface of the body is not the chief medium of its entrance, as in the contagion of the plague, psorax in syphilis, &c. being also much less permeable than the surface of the lungs. Moreover, while the greatest part of the surface of the body is carefully protected, in this climate, from the influence of the atmosphere, the lungs are, on the contrary, most intimately connected with it, being from the beginning to the end of life constantly employed in decomposing its constituent principles, and in directly appropriating and mingling its oxygen, the element most essential to good health, with the blood, while the lungs themselves are in such health and vigour as to effect or accomplish properly this important operation.

It is still less likely that the poison enters the system by the alimentary canal, than even by the skin, at least in a sufficient quantity to deteriorate the constitution, for various and obvious reasons, which it is quite unnecessary here to enumerate. If, however, the poison is received through the medium of the lungs, as we believe it must chiefly be, the most natural inference from this reception would be, that the disease should first become manifest in the chest, and, accordingly, it has been supposed that one of the primary steps in the morbid process was an unfitness of the lungs to renovate the blood; yet very ample experience has shown that the lungs are never seriously implicated. The working, effect, or most manifest sign of this poisoning, or operation of the noxious ingredient, takes place at a distance from the place of its supposed reception, in the organs of digestion, and especially the stomach and small intestines. This, however, has been justly held as "merely the expression or sign of certain changes produced in the two most important functions of the body,—those of the circulating and nervous systems." There is scarcely an organ in the human body that is not acted on by some poison or another, either from the animal, vegetable, or mineral kingdom. Thus, arsenic, whatever be the texture in the body to which it is applied, provided death do not ensue quickly, almost always produces inflammation in the stomach and intestines; "mercury the salivary organs and mouth; cantharides the urinary organs; chromate of potass, the conjunctiva of the eyes; manganese the liver; iodine acts on the lymphatic glands; and spurred rye causes gangrene of the limbs." Some of these, and many other poisons, have a general as well as a particular action. Narcotics act on the brain; but other organs are frequently acted on at the same time,—particularly the spine and heart. "It has been maintained by some, that all poisons which have a remote action exert it through the medium of the brain. This is probably true of many poisons, but it does not apply well to those which act on remote organs, such as the heart or spine, without causing any sensible symptom referrible to the head. The infusion of tobacco paralyses the heart; and nux vomica irritates the spine, without causing any disorder of the mind, which could scarcely happen if they acted through the medium of the brain." * We have alluded to the action of these poisons, because the symptoms of cholera resemble much the action produced by certain poisons; and those who have died of the disease have frequently been said to die as if from a stroke of lightning, or from poisoning. This brings to our remembrance, that a distinguished anatomist, while demonstrating the stomach, said, that it had been compared to a mill, a vat, or a stew-pan; but that it was in reality neither a mill, a vat, or a stew-pan, but a stomach.

We are quite aware, then, that although in individual instances there may be much similarity as to symptoms, still these who die do not usually expire like persons who have been killed by lightning or who have been poisoned, but like persons affected with *cholera*,—a disease produced either by a peculiar and unknown combination of circumstances, or by a miasm or poison, *sui generis*. Some poisons, such as nitric oxide gas, sulphuretted hydrogen, and hydrocyanic acid, when injected into a vein, sensibly change or decompose the blood; and, on the contrary, some poisons seem to be decomposed by the living action carried on within the vessels. Bearing these circumstances in view, and at the same time taking into account that no very satisfactory explanation could be offered why chromate of potass should affect the conjunctiva of the eyes, spurred rye cause gangrene of the limbs; or why manganese should so particularly affect, and small doses of sulphate of copper concentrate in, the liver; it may be inferred, that the effort to explain why the blood was charged, or how the choleric poison concentrated itself chiefly in the abdominal nerves, and the parts with which they are connected, and was ultimately expended by a torrent issuing from the mucous membrane of the stomach and bowels, would scarcely be more successful. In many instances the cause can be partly discerned, and the effect be pretty accurately estimated, while many links in the chain, or the *modus operandi*, remain hid from our view. We have there-

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* *Vide* Professor Christison's admirable work on Poisons, Second edit. p. 10.

fore had recourse to the action of poisons, more by way of illustration, than from any very intimate analogy that we can trace between their action and the pathology of the disease in question.

Every step in an inquiry into the intimate nature of this disease is beset with difficulty; and one hypothetical explanation of a phenomenon only leads on to another. Admitting, then, that the choleric miasm or poison is received into the lungs, and that the chief seat of the disease is in the stomach and small intestines, in which way does the poison get transferred to the abdominal nerves, stomach, and small intestines, &c.? Is it received into the blood, or is it transmitted directly along the nerves, or through the medium of the brain? Or in what way is the morbid process brought about?

We infer that it is received into the blood, from what is known to take place between the air and blood in the lungs, and from the tendency which the blood has to separate into a thicker and thinner part, and especially as this decomposition takes place so early, and is so prominent and remarkable a feature in the most violent and interesting stages of the disease, as to be accounted by some one of its primary and essential causes. Yet we admit that no change can take place in the blood without instantly affecting the brain and nerves, and we farther contend, that, although the noxious miasm, poison, infection, or by whatever name the thing is designated, does enter the blood during the decomposition of the atmospherical air in the lungs, still that the brain, or rather the nerves, so soon respond, or act reciprocally, prominently, and influentially, on the sanguiferous system, as materially to impair and diminish its governing power,—by virtue of which the blood is partly kept in a state of health and fluidity; so as to make the reception of the poison into the blood, and the affection or diminution of the nervous power appear almost simultaneously.

We have attached in this instance more importance to the action of the nerves than to the brain, from bearing in remembrance, that in the early stages of the disease the brain seems but little affected, and from the sinking and feeble action of the heart and arteries at that period. In this respect we recognize an analogy between the primary effects of the choleric miasm and some of those poisons which more immediately induce palsy of the heart, such for instance as tobacco, *Upas Antiar*, and perhaps oxalic acid, in certain quantities, and particular states of concentration, without the brain being in the first instance materially implicated.

It does not appear necessary to dwell at any length upon the direct transmission of the choleric poison to the ganglionic system of nerves, from an impression on the sentient extremities of the nerves, either of the lungs, surface of the body, or alimentary canal.

Few unequivocal instances are known of local nervous impressions without some organic change,—yet the transmission of certain nervous impressions from one organ to another is a law in the animal economy which cannot be denied, and is aptly illustrated by many familiar examples of sympathy between remote organs, which it is quite unnecessary to point out particularly. Yet these sympathetic actions seldom continue long without inducing organic disease; and in cholera, as in many other diseases, it is inferred, that we will be more correct in our notions, and consequently more successful in our inquiries, and methods of treatment, by regarding the system as a whole, than by dwelling on the attributes of particular parts.

Lest it should be objected to this statement about the choleric miasm or poison, on which our conjectures are founded, that it is only an hypothesis, or invention, or nonentity, which cannot be demonstrated to the senses, it may be necessary to remind the reader, that, in regard to actual demonstration, it is precisely so in respect to the contagion of the small-pox, measles, scarlet fever, plague, typhus fever, and every other infectious disease. Farther, everything we have seen, and much that we have heard, induces us to believe that malignant cholera has no good title to be classed with infectious diseases. As it is with infectious, so is it with marsh miasmata, neither the advanced state of chemical science, nor the skill of the most refined experimenter, has yet been able to detect them even in their most concentrated and noxious form. The whole of the knowledge we possess concerning those emanations arises from their effects, yet these are so certain, and many of the laws which govern their action on the human body have been so ably defined, as to set their existence beyond all doubt, affording not an inapt illustration, that an hypothesis may be strictly correct, although, from the imperfect state of our knowledge, it may be wholly unsusceptible of demonstration.

We by no means wish to infer that the epidemic cholera proceeds from marsh miasmata; yet every one conversant with certain powers of miasmatic fever can scarcely help, we think, being forcibly impressed with the notion, that there is such a strong resemblance between the two diseases, as to justify us in soliciting more general attention to the subject, and to warrant us in stating, that the analogy is greater than between cholera and any acknowledged infectious disease. In corroboration of this, we refer to the able work of the late Dr Jackson, on the Yellow Fever on the South Coasts of Spain, published in 1821. At page

78th, when treating of the yellow fever in what he denominates the lymphous or phlegmatic temperament, he states, that the present fever is "characterized by defective energy in the circulation, and consequent imperfect function throughout the whole system," and that, with a statue-like aspect of countenance, there is "a form of local action principally among the abdominal organs, often observed to similate cholic or *cholera of an unusual kind*; the lips are blanched and shrivelled, and the matter thrown up from the stomach, after the common contents are discharged, is rarely any other than dirty-coloured water, glutinous or ropy by admixture. Bile, either bitter, green, or yellow, is scarcely ever ejected from the stomach." And at page 85, there is, in reference to the subject brought under notice, a very remarkable paragraph, which we will quote at length. "This cerebral form of fever is not uncommon; the form styled *choleric* by the writer, perhaps not correctly, is still more frequent. If choleric be applied to increased secretions and extraordinary discharges of matters of the common bilious character, the term is the reverse of what is just. The secretion of what is properly called bile may be said to be suspended in the present case; the smallest tinge of it is not to be discovered in what is ejected by the mouth, or dejected by the anus." "The evacuations upwards and downwards are neither green, yellow, nor bitter—in fact, have no property that is ordinarily ascribed to bile. The vomited matters consist, for the most part, of a dirty-coloured fluid, mawkish and insipid; the dejections by stool, whether natural or produced by art, of a substance without smell or appearance of feculence, often black like water, into which a quantity of soot or charcoal has been thrown, occasionally interspersed with grains like grains of glazed gunpowder, or with flakes of a villous appearance, viz. abrasions from the interior coat of the intestine. The alvine evacuation has at no time, during the intensity of the course of the disease, a smell of feculence, and it possesses no sharpness or acrimony, as bilious dejections usually do. It sometimes, towards the latter period, becomes of a pultaceous consistence, retaining the black colour, and occasionally emitting a sickly offensive smell, different from the smell of feculence, but so marked in its circumstances as to indicate a complete subversion and change in the nature of the secretions of the alimentary canal in its connections."

In the enumeration of the symptoms in section iii. "as manifested on the base of the serous temperament," he states, that, "if actual vomiting take place, the matter ejected, after the common contents of the stomach are thrown up, is watery, rarely if ever bilious; it is sometimes dirty and dark-coloured. If purging supervene at this time, the stools, after the first, and perhaps, the second are generally watery, neither bilious nor feculent;" and at page 101, "bile sometimes appears in the first ejections from the stomach, but only in the first, and that not often. The matter thrown up at the early period is ordinarily that which has been recently drank, rendered ropy by secretions from the mucous membrane, at the more advanced periods, it is loaded with flaky substances, apparently portions of the interior coats of the stomach." In various places of the same work he alludes to the evacuations being "ropy, watery, but rarely, if ever, bitter, yellow, green, or what is called bilious;" and in the chapter on prognosis, "vomiting of a ropy fluid, without effort or straining, may be justly considered as a suspicious sign. Vomiting of bitter bile, whether green or yellow, even with straining and severe retching, affords a sign of comparative safety." This remark will very generally apply to the present epidemic. Many other extracts might be made from various other authors to the same effect; but we selected the work of the late Dr Jackson, from his great experience and acknowledged talents.

In as far then as the evacuations from the stomach and bowels are concerned, the resemblance between cholera and yellow fever is nearly complete, and much greater than that between cholera and any of the contagious or infectious diseases. The similarity, however, does not terminate here. There is the same extraordinary and sudden prostration of strength, and complete suppression of urine in the worst forms of the two diseases. Moreover, Dr Jackson often mentions "a cold viscous or glutinous sweat," which we also have observed, and similar in all probability to what is met with in cholera. In yellow fever the stomach is doubtless, in many instances, abraded or partly disorganised. But it is highly probable, that the shreds, patches, and flaky matter, so often mentioned as seen in the evacuations, and supposed by him and others to consist of detached pieces of the inner membrane of the stomach and bowels, were often in reality the fibrinous part of the blood, or a sero-albuminous discharge mixed with mucus. We will not, however, attempt to draw the resemblance too close, well knowing that the parallel will not hold good and true throughout. We trust enough has been said on the subject to awaken farther attention, and to show that the supposed existence of choleric miasmata is greatly strengthened by the comparison; and the relationship of the malignant cholera to the atmospherical or miasmatic diseases, if they may be so termed, rather than to the contagious, is therefore rendered highly probable. The enormous discharge from the stomach and bowels in the two diseases is not hypothetical.

Had cholera been an eminently infectious disease, it appears probable that there would not now have remained a vestige of doubt on the subject. Within the last fifteen years, it is calculated to have carried off nearly 50,000,000 of people; but it may justly be observed, that in every instance of panic, where accurate accounts are not kept of such as die of this or any other epidemic disease, men are prone to make exaggerated statements even in this enlightened country; and the Asiatics and Chinese, among whom the disease has chiefly prevailed, are well known far to transcend their European brethren in the vice of exaggeration. From this circumstance, and from the numbers which have died where accurate accounts have been kept, we are inclined to consider the computation too high. It is, however, more to our purpose, that during the whole period the disease has been studied by the British medical officers in India, than whom, perhaps, a more intelligent class of medical men do not exist, and the opinion among them was, and is still very general, that the disease was totally devoid of infections properties. True, it has been supposed that the disease has changed its nature somewhat since its arrival in Europe, and we are inclined, judging from what was written concerning it in India, that, to a certain extent, this is actually the case. At least the premonitory symptoms and the consecutive fever have been much more attended to in Europe than in India. The essential and characteristic symptoms appear to have been the same in both countries.

Although it has now prevailed in England a whole year, the important points as to its contagious or non-contagious properties, seem as far from being settled as ever. This subject of human contagion, while it is one of the most important which can be suggested to human curiosity, is at the same time one of the most difficult to investigate of any which relates to disease. It is owing to the extreme and almost insurmountable difficulties which environ the subject of contagions or infections generally, along with the circumstance of popular approbation, in the instance of malignant cholera, being nearly all on one side, that we are partly indebted for the little progress that has been made in reference to it. It may, therefore, be not altogether unprofitable to state here some of the most authentic facts regarding the infectious diseases with which we are best acquainted, and compare some of those facts with what we know about malignant cholera, and its diffusion or progress among mankind.

From the time that a healthy person is exposed to the influence of an infectious disease, and imbibes the infection, ere a similar disease arises in that individual, there is a space or period of time elapses, of longer or shorter duration, according to the nature of the particular infection to which he had been exposed, which has aptly enough been called the *latent period*, or time of incubation, maturation, or multiplication. It varies from three to six days in the plague; from one to four weeks or even two months in typhus fever; from ten to fourteen days in small-pox; from eight to twelve or fourteen days in the measles, or a somewhat shorter period than in the small-pox; from four to five days in the scarlet fever, and about the same or a somewhat less period in hospital gangrene; from six to seven weeks in frambœsia; and from three weeks to nine months, or even much longer it has been alleged, in hydrophobia.

Those who have asserted that cholera is undoubtedly an infectious disease have not, so far as we know, propounded the laws by which this supposed infection is governed. There are diseases which cannot be produced in any other way but by contagion, such, for example, as the cow-pox, hydrophobia, and syphilis, the plague, and small-pox, along with some of the exanthemata, have been added to the unchangeable list, apparently with less claim, and have been distinguished as arising from *specific contagion*, in contradistinction to other diseases, such as catarrh, typhus fever, and scarlatina, &c. diseases which, although occasionally produced by contagion, are often induced by the agency of other causes, and are therefore referrible to *common contagion*. Malignant cholera, if it is contagious or infectious, for the terms are here used synonymously, ought evidently to be classed with the *common*, not certainly with the *specific*, *infections*.

In the truly infectious diseases, a gradual spreading from man to man by intercourse may generally be traced in the most distinct and unequivocal manner,—seclusion is prevention, and exposure is followed usually by infection,—the latent period is quite as well defined as the duration of the disease. In cholera seclusion is not generally prevention, nor is exposure usually, if ever, followed by infection.

There is such a vast and immeasurable distance between those known and acknowledged latent periods, and gradual and palpable spreading from man to man, when compared with the violent explosions of cholera at one time, and its slow and irregular course on other occasions, showing no infectious properties whatever, even under circumstances eminently calculated for the diffusion of contagion, that we think it behoves all persons anxious to ascertain the truth, to weigh well a question which in various ways deeply involves the welfare, not only of this nation but of the human race, and that we are, therefore, warranted in withholding our assent to the notion, that cholera is an infectious disease, till more is known concerning it, and better and more unequivocal proofs are afforded than any we are yet acquainted with.

The following statement, however, will doubtless afford more satisfactory evidence that the malignant cholera possessed no infectious properties in this place, than any other which we can adduce.

Total number of cases from the commencement of the epidemic on the 2d of July to the 14th of November, 1832.—In 1 house, 5 cases; in 2 houses, 4 each; in 2 ditto, 3 each; in 19 ditto, 2 each; in 114 ditto, 1 each. Total 171 cases in 138 houses.

The population of Kendal in 1831 was 11,301. The number of inhabited houses was 2,092.

This circumstance is the more remarkable, from the whole number of patients having been treated in their own miserable dwellings; than which, nothing could have been more eminently calculated for the rapid diffusion of the disease had it been endowed with active infectious properties. If there had been an hospital for cholera patients here, and two or three *Houses of Observation* attached to it, the Board of Health would doubtless have recommended, that when a person was seized with the disease, that individual should instantly be removed to the hospital, and the other members of the family to one of the Houses of Observation, while the destruction or purification of their bedding and furniture should be zealously carried on. Now, the undoubted success, as would have been supposed, which attended such praiseworthy and most judicious efforts, along with interment in some lonely place, which would have redoubled their diligence, and strengthened and rivetted all their preconceived notions about contagion,—there is no calculating how far the delusion might have been carried, or what credit might have redounded to the Board of Health for their *supposed* prevention, or controlment of the disease. Lucklessly for them, however, if they looked for popular applause as a compensation for their labours, they received a very different *guerdon*. This home treatment brought to our notice facts which could not have been observed had we had an hospital, and which are not at all in keeping with the notion of contagion. We have known twelve instances of mothers labouring under the disease, while they continued to suckle their children, while the infants remained entirely exempt from illness. There has only been one instance of a mother and child at the breast having the disease. On the other hand, we have known an infant at the breast have the disease while the mother escaped. The husband sometimes suffered, while the wife escaped, and *vice versa*. It rarely happened in a house where the epidemic cholera appeared, that there were more than two or three beds, and often there was only one; yet there was no spreading in families, as will be seen by the numerical return, with a few exceptions, which will be noticed by-and-by,—not that we think those exceptions favoured in reality the notion of infection, but were instances where its semblance only was shown. It was not unusual for one of a family to have the cholera, while two or three slept in the same bed with the patient, and entirely escaped; or, like the greater part of people at the time, some of them might have a slight diarrhœa. When a case of cholera has once occurred in a house, there are several very obvious reasons why we would rather expect it to continue in that family than pass on to another. The members of one house are in general nearly all similarly situated with respect to food, clothing, and lodging. One of the family " down," the others are often mistimed as to food, which is likely to be more scanty than even before, and the inmates are almost always disturbed during the night at such a period; they are besides often very much alarmed, and this is a species of contagion to which we attach more importance in the present epidemic than to any morbid product or emanation from the bodies of those labouring under the disease. Moreover, wherever the disease spotaneously fixes its abode, there is a family constitution or idiosyncrasy, which their neighbours, equally poor, and quite as likely, have not; and hence, too, it may be inferred that relations similarly situated, and acted on by anxiety or excitement, are more liable to be next attacked, being of the same blood, than strangers.

It would appear that choleric visitations have occurred accompanied with apparent proofs of contagion, or infection, which in reality owed much of their virulence and diffusion to panic, sympathy, or imitation, giving origin to occurrences analogous to and bearing all the semblances of contagion, yet, in truth, essentially different, being immeasureably swifter in their operation, and not at all in keeping with the known and acknowledged progress of an infectious disease, or the result of morbid products, or emanations elaborated and arising from the bodies of those labouring under disease, *devoid of a latent period.* We cite a few of the more notorious occurrences which seem to favour this principle. At Bassora, a town containing about 60,000 inhabitants, 18,000 died, and 14,000 of those are reported to have died in the course of two weeks. At Muscat 10,000 persons are stated to have died in an incredible short time. At Busheer, containing about 6000 inhabitants, 1000 died. At Shiras 10,000 died out of a population of 40,000. At Dumfries 183 persons died in eight days, and in Mecca, out of 50,000 pilgrims who visited the tomb of Mahomet in 1831, 20,000 are said to have died in about one month.

Are these facts consistent with what has been stated concerning our knowledge of the latent period of infection and the progress of infectious diseases? We do not assert that panic alone will produce an attack of cholera; but we are inclined to believe that the explosions already alluded to, which have astonished the world, point in an especial manner to this principle, in conjunction with the epidemic constitution of the atmosphere. This principle has been alluded to in a valuable paper by Dr Fergusson, published in the number of this Journal for July last,* where it is stated, "There is still another principle having resemblance to contagion, and affecting the health of masses or bodies of men, of which, as it acts on the fluctuating bases of moral and mental agencies, it is difficult to give any intelligible account. The health of a ship's company, for instance, or a corps of troops, when the *morale* is good, the discipline strict but kind, and the confidence of the men assured, will often be found firm in the midst of endemic and epidemic diseases, and plague and pestilence seem to pass them harmless until the introduction of unseasoned recruits, even though healthy at the time,—a change of system or some other cause makes a break in the general health, and then will the whole rush into disease with a proclivity of current fully as remarkable as the previous immunity." In farther illustration of this principle, it may be stated, that severe salivation has been produced by the influence of the imagination where mercury was not given in a quantity to produce such a phenomenon. In the imaginary salivation, however, the mercurial fetor and redness of the gums are entirely wanting. There are other ways in which these terrible explosions seem to admit of some explanation besides that alluded to. The epidemic constitution of the atmosphere may be imagined to be so concentrated and omnipotent in particular spots as to account for the most frightful mortality which has yet occurred; or it may be aided by swamps and marshes in certain localities, acting on a poorly fed sickly people in a densely inhabited district.

Lest any one should consider the phrase *epidemic constitution of the atmosphere* as a nonentity, a *vox et preterea nihil*, it may be as well briefly to mention, that we allude to that state of atmosphere which at particular times favours the diffusion and spreading of certain diseases, in contradistinction to that state which checks or extinguishes them. The plague itself, though eminently infectious, is yet particularly amenable to this law. It usually thrives and spreads only in a certain atmosphere,—extreme heat or cold seem equally to extinguish it.

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* Vide July No. page 80, where the principle is explained at greater length.

Catarrh, a disease not usually epidemic or infectious, has yet its original nature so much changed by certain unknown states of the atmosphere as to become not only one of the most widely spreading epidemics known, but also infectious. Much discussion has taken place whether this is owing to some disproportion in the original ingredients, or to some addition positively noxious. Marsh miasmata is an instance of the latter. The greater number of diseases are in some way or other modified by atmospherical influences. We believe it is reckoned scarcely fair to allude to such things in a scientific investigation, but really the use that may be, and is made, of this unseen hand, in visiting and smiting the nations, would seem, as if it had been intended to be comprehended under that species of knowledge, which " is too wonderful for us; it is high, we cannot attain it."

Terrestrial emanations alone cannot be considered the cause of cholera; but, aided by the epidemic constitution of the atmosphere, the effects of panic, and other causes combined, will, it may be readily conceived, go far to explain the progress of the disease, and to strip contagion of much, if not the whole, of its supposed power. Even in this town we have seen that locality increased and rendered the disease more malignant; and its predilection for masses of water seems obvious from its ravages at Bassora, Bagdad, Astrachan, and its general prevalence along the great rivers of Asia and Asiatic Russia, as well as on the Banks of the St Lawrence, and the lakes and rivers of North America. The greater prevalence of cholera, too, in our own sea-ports than in inland towns cannot have escaped notice.

It may be imagined that infection is an essential attribute of cholera, and that this principle acquires strength and activity under the circumstances already alluded to, but that, under different circumstances, the infection is so feeble as to become almost inappreciable, if not altogether extinct. There is nothing incongruous in this supposition,—the contagion of typhus acts nearly in accordance with it. Our prepossessions and leaning from what we have seen and can understand, are in favour of non-contagion; but the modified doctrine, which generally admits the spontaneous origin of cholera, and in particular unknown circumstances, its propagation afterwards, from man to man by infection, may turn out, by more extensive experience, to be nearer the truth than the leaders of the two great parties into which medical men are divided are yet willing to acknowledge. A writer of great power in a late number of this Journal, * but with an evident bias in favour of the contagious nature of the

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* Vide, Edin. Med. Journal, No. 110, page 200.

disease, concludes a long chain of reasoning, conducted with much apparent fairness, and unquestionable ability, with the following very moderate sentence, which may almost be construed as sufficient evidence that its infectious nature cannot be satisfactorily established, or it would have been so on that occasion. "We admit," says the writer, "that there are many facts, so far as can be seen free from fallacy, which prove that malignant cholera may arise from some other cause besides communication with the sick; and all that we contend for is, that, after it has in one way or another arisen, it may in some peculiar circumstances propagate itself from man to man."

Isolated cases of malignant cholera have occurred in many of the villages and hamlets around this; but we have not known a single instance where it could be distinctly traced to arise from communication with supposed infected persons in Kendal; or a place where the disease spread after its spontaneous occurrence, except at the village of Sedgwick, where four or six cases happened. Why this village suffered more than the others we know not, unless from being situated near the river, and from an extensive orchard in the neighbourhood, from which they probably derived a more than ordinary allowance of fruit.

A single case of malignant cholera occurred at Settle, where no intercourse with an infected place or person could be traced; and no other case has happened after the lapse of three months. A woman and her child from near Brough, about thirty miles distant, one of the healthiest parts of England, travelled over a mountainous district by Orton, to a house about two miles on the farther side of Kendal, which she avoided on her way thither on account of the epidemic; yet a few days after her arrival the child was seized with malignant cholera, and died in about sixteen hours' illness. No person at that house had the disease, either previous to their arrival, or since the death of the child; nor had that family had any known connection with choleric patients. Another instance of the spontaneous origin of malignant cholera occurred at Hawkshead, a remote village about thirteen miles from this, and about five miles from Coniston *Old Man*, one of the famous mountains in the north of England. Mr Burn, who attended these cases, states, "that eight cases of malignant cholera occurred in our poor-house in first week of September. Four terminated fatally, after twenty-four, nineteen, and twenty hours' indisposition, but the last fatal case lingered three days." The others had consecutive fever. There were sixteen persons in the poor-house. He adds, "I can trace no one circumstance that induces me to believe that this dreadful disease arose from contagion." He farther states, that, "immediately on the complaint making its appearance, I set to work to ascertain the cause, and found the house nearly surrounded with stagnant water. The pool from which the inmates took their water for domestic purposes was covered entirely with *animalculæ*, and the drains all stopped. When these nuisances were removed and corrected, the disease abated, after one-half the number had suffered."

It must not, however, be concluded, that it is impossible to mention instances during this epidemic where the semblances of infection were manifested. The five cases in one house have been cited in addition to others already alluded to. In answer to this it may be stated, that this house was in Robinson's Yard, which is situate in a district pointed out (No. 6 on the chart,) by us in a paper published in this Journal upwards of ten years ago, as insalubrious. "On the west of Stricklandgate, or between this part of the town and hill, there is an unoccupied space, which was formerly a morass or swamp, but by culture and draining has become a productive meadow. This marsh was formerly considered the parent of intermittent fevers. Since the draining these have entirely disappeared; but still it seems to have some influence on the general health of the inhabitants, from their sallow appearance, (I allude to the people who inhabit the small houses on the back of Stricklandgate,) and from the number of febrile, dyspeptic, bilious, and rheumatic patients, who apply for relief at the Dispensary from this neighbourhood." When the above extract was written, we could scarcely be supposed to expect that the malignant cholera was likely to prevail on the very spot.

A woman who helped to "lay out" John Atkinson on the 14th of July, was seized on the 16th, and her daughter on the 17th, with symptoms of the epidemic cholera, but neither went into the stage of collapse, and both recovered. Another woman, who had performed the same office in the case of a death which happened on the 6th of July, was also seized with cholera, and recovered. If those who performed this office had generally been attacked, doubtless we must have come to a different conclusion about the infectious nature of the disease; but as they were the only two instances which came to our knowledge, and happened early in the epidemic, and were cases of a very questionable nature, we believe panic had something to do with the indisposition of those persons. On inquiry, we found that several others had assisted, and that twenty-six persons had visited Atkinson's house, from the time the child died ere the father was interred, besides those who attended the funerals; and no other person connected with them, or those transactions suffered from cholera.

Every one who has paid the least attention to the subject of contagion or infection has felt the difficulty of determining whether events of the kind now specified arise from infection, or are only coincident. It may be well to bear in mind, that a distinction has been made between facts adduced to show the existence of contagion, from the circumstance of certain persons having been attacked by a particular disease, which have been denominated affirmative proofs; and other facts showing the non-existence of contagion, from a number of persons having escaped the disorder, who had been fully exposed to the action of evacuations, arising from persons supposed to be infected,—these have been called negative proofs. Accordingly, the late Dr Haygarth wisely remarked, that "observation or experiment can determine with much greater certainty what does not, than what does, give infection;" consequently, the negative proof is considered "capable of being established by incomparably stronger evidence than the affirmative, and is therefore, in all cases, much better entitled to credit."

In as far, then, as such a fact appears to admit of proof, the malignant cholera was here unconnected with infectious introduction or propagation.

The ages of the persons affected with malignant cholera, and who died of it in Kendal, from the 2d of July to the 30th of October, when the epidemic ceased.

					Deaths.	
	Male.	Female.	Total.	Male.	Female.	Tot.
Under 5 years,	11	6	17	8	3	11
From 5 to 10,	7	14	21	3	5	8
From 10 to 20,	9	8	17	2	1	3
From 20 to 30,	14	16	30	7	3	10
From 30 to 40,	7	16	23	3	2	5
From 40 to 50,	11	9	20	1	2	3
From 50 to 60,	7	5	12	5	3	8
From 60 to 70,	10	7	17	6	5	11
From 70 to 80,	4	4	8	4	3	7
From 80 to 90,	2	4	6	1	2	3
Total,	82	89	171	40	29	69

Total Males, -	82	Total Females, -	89
Deaths, -	40	Deaths -	29

The periods at which they were discharged, cured, or died, are as follows:

Recovered, on the 2d day, 5; on 3d day, 7; on 4th day, 2; on 5th day, 5; on 6th day, 7; on 7th day, 14. In second week, 45; in third week, 16; in 4th week 1;—in all, 102.

Died, within 12 hours, 4; from 12 to 24 hours, 8; on 2d day, 18; on 3d day, 5; on 4th day, 6; on 5th day, 3; on 6th day, 5; on 7th day, 7. In 2d week, 11; in third week, 1; in 4th week, 1;—in all, 69.

It may be inferred generally, that all who survived till the sixth or seventh day, and died afterwards, died from consecutive fever.

The patients that could not be attended by the surgeon at the dispensary had the privilege of selecting their own medical man, on an understanding that the Board of Health would allow some remuneration. But it was determined, that the medical men attached to the Board should visit every case reported, that no mistake might occur about the nature of the disease. In consequence of this arrangement, we saw almost every case. The junior surgeons attended the greater number, and, with the exception of the saline injection into the veins, we had an opportunity of seeing almost every plan of treatment tried that has been recommended, from the mercurial, down to croton oil and cold water. Mercury in various states of combination, judiciously dosed, and managed, given before the stage of collapse, can accomplish much, and appeared incomparably superior to every other remedy and plan.

In the early stage of the disease, that of diarrhœa, calomel and the compound powder of ipecacuanha, or a pill containing two grains of calomel, one of ipecacuanha, and a quarter or half a grain of opium, given two, three, or four times a day, according to the urgency of the case, aided by cretaceous mixture, or carbonate of soda, was a favourite mode of proceeding, and generally answered every purpose, provided that the patient was strictly confined to bed, and properly cleaned, clothed with flannel, and dieted. As soon as the bowels were restrained a little, the opium was withdrawn, and the *Hydragyrus cum creta*, or blue pill substituted for the preparation in previous use, lengthening the period between the doses. When the disease was somewhat controlled, there was not any necessity for pushing the mercurial remedies far. At this period, we think, that we have sometimes seen patients suffer from the *nimia diligentia medici*. By time, and watching the improvement in the general health, and particularly the healthy or unhealthy state of the feces, the farther exhibition of mercury is often quite unnecessary.

In the second stage of the disease, when there was vomiting as well as purging, and when the evacuations had become devoid of bile and feces, accompanied with cramps, the same remedies were used, substituting saline effervescent draughts for the cretaceous mixture, and apportioning the doses to the ominous nature of the symptoms; and here we would observe, that we never saw any apparent advantage either from large doses, or very frequent exhibition. We do not think that we ever saw a patient recover, where mercury was given every five or ten minutes, that would not just as likely have recovered from moderate doses given every two or three hours. Yet it is a mode of exhibition which has become popular with medical men, and its eligibility must be determined by extensive experience in hospital practice.

Occasionally we have added a grain of the red oxyde of mercury to the calomel with apparent advantage. A mustard cataplasm to the abdomen, and the application of heat, were the chief additions made to the practice pursued in the stage of diarrhœa; and when the spasms were severe, occasionally opiate frictions were had recourse to, in the manner recommended by Dr Bow, diminishing the quantity of opium given by the mouth.

We pursued nearly the same practice in the stage of collapse, occasionally giving camphor, and a mixture containing carbonate of soda, and compound spirit of ammonia. Brandy, too, in certain states, we have seen apparently of use.

The saline plan of treatment, we think, was rather useful than otherwise, which is more than can be said of many remedies that have been recommended.

Water holding in solution carbonate of soda, and with the addition of a small proportion of laudanum, may sometimes be of some use; but the few trials which we saw made with cold water did not promise much, and it was consequently abandoned. With respect to the consecutive fever, it may be observed, that he who has most closely studied the pathology of fever, and is best acquainted with the treatment of its congestive, insidious, and most dangerous forms, will be most successful in the management of the consecutive stages of malignant cholera.

Kendal, Nov. 17, 1832.

Art. IV.—*Medico-Chirurgical Report of the Huddersfield Infirmary, from June* 29, 1831, *to June* 29, 1832. By William Turnbull, M. D. Physician to the Institution.

Huddersfield is indebted for its Infirmary to Mr Samuel Clay. His persevering efforts were mainly instrumental in obtaining donations to the amount of nearly L. 11,000, for the establishment of the charity. The ladies, also, of the district, never wanting in acts of benevolence, instituted a Bazaar for the purpose of raising a fund to furnish the house. In this they were eminently successful, and transferred to the treasurer upwards of L. 1500.

The foundation of the building was laid by J. C. Ramsden, Esq. on the 29th June 1829, and the hospital was opened by a public ceremony on the 29th June 1831. Few patients, which has aptly enough been called the *latent period*, or time of incubation, maturation, or multiplication. It varies from three to six days in the plague; from one to four weeks or even two months in typhus fever; from ten to fourteen days in small-pox; from eight to twelve or fourteen days in the measles, or a somewhat shorter period than in the small-pox; from four to five days in the scarlet fever, and about the same or a somewhat less period in hospital gangrene; from six to seven weeks in frambœsia; and from three weeks to nine months, or even much longer it has been alleged, in hydrophobia.

Those who have asserted that cholera is undoubtedly an infectious disease have not, so far as we know, propounded the laws by which this supposed infection is governed. There are diseases which cannot be produced in any other way but by contagion, such, for example, as the cow-pox, hydrophobia, and syphilis, the plague, and small-pox, along with some of the exanthemata, have been added to the unchangeable list, apparently with less claim, and have been distinguished as arising from *specific contagion*, in contradistinction to other diseases, such as catarrh, typhus fever, and scarlatina, &c. diseases which, although occasionally produced by contagion, are often induced by the agency of other causes, and are therefore referrible to *common contagion*. Malignant cholera, if it is contagious or infectious, for the terms are here used synonymously, ought evidently to be classed with the *common*, not certainly with the *specific, infections*.

In the truly infectious diseases, a gradual spreading from man to man by intercourse may generally be traced in the most distinct and unequivocal manner,—seclusion is prevention, and exposure is followed usually by infection,—the latent period is quite as well defined as the duration of the disease. In cholera seclusion is not generally prevention, nor is exposure usually, if ever, followed by infection.

There is such a vast and immeasurable distance between those known and acknowledged latent periods, and gradual and palpable spreading from man to man, when compared with the violent explosions of cholera at one time, and its slow and irregular course on other occasions, showing no infectious properties whatever, even under circumstances eminently calculated for the diffusion of contagion, that we think it behoves all persons anxious to ascertain the truth, to weigh well a question which in various ways deeply involves the welfare, not only of this nation but of the human race, and that we are, therefore, warranted in withholding our assent to the notion, that cholera is an infectious disease, till more is known concerning it, and better and more

Abscess.—Joseph Lowe, æt. 17, from Paddock, was admitted under the care of Mr Robinson on the 18th of November. He had light hair and complexion, and delicate skin; and on his left hip there was a large swelling, with a small fistulous opening, from which issued tolerably healthy pus. The probe passed readily to some distance all round this opening, but no diseased bone could be detected. The complaint had existed a long time, and he had tried many popular remedies without the least benefit. No cause could be assigned for its appearance. A depending opening was made, and a seton introduced, a stimulating liniment applied, and iodine given internally, under which treatment he gradually improved, and was made an out-patient. January 6th, nearly well.

Ann Messinger, æt. 21, Lepton, came under the care of Mr Atkinson, for a swelling of the calf of the leg, extending from near the ankle to within a little of the popliteal region. It felt very hard, was tolerably free from pain, and had been observed about four months. She knew no cause for it, and her general health was good. Poultices were applied. It gradually became softer, and evidently contained a fluid. On being punctured, laudable purulent matter escaped. The cure, however, proved rather tedious; but ultimately, after using injections, she went out cured.

John Iredale, æt. 15, Old Lindley, admitted on Mr Robinson's week, for a swelling of considerable size along the outer side of left thigh. It was colourless, slightly painful, and changed shape on change of position of the limb. There was likewise a distinct sense of fluctuation. He had first observed some stiffness and enlargement of the thigh seven or eight months previously, and the latter had steadily, although slowly, increased. He could give no cause for it. His looks were pale; but his general health was tolerable, and he had been able to work to the time of his admission. On a lancet being thrust into the swelling just above the knee, a quart of purulent matter was let out. The discharge continued rather profuse for some time, and he was liable to febrile paroxysms. These yielded to salines and alteratives, and afterwards iodine was exhibited. He remained in the house three months, and even then slight discharge continued. I am not sure whether this matter did not come from the loins.

Aneurism from Anastomosis.—Lydia Hirst, æt. 14, from Scammonden, admitted under the care of Mr Atkinson, November 10th. Behind the ear, forwards on the temple, and partly on the hairy scalp, were several irregular, puffy, prominences, which communicated a thrilling sensation to the finger. The external ear was considerably enlarged, especially the *pinna*, and of a dusky hue; and several tortuous arteries, the size of a small quill, ramified upon it, and throbbed violently. From one of these profuse hemorrhage had taken place from time to time. Pressure on the temporal artery lessened greatly the pulsation, and likewise the puffiness. Indeed, whilst the pressure was kept up, the thrill in the tumour was imperceptible. The complaint had existed from birth, but of late had increased rapidly. The temporal artery was tied just before the *meatus auditorius*, and well-adapted compression applied to the morbid parts. Under this plan she improved considerably, the size and pulsation diminished, and the skin of the *pinna* regained its natural colour. She was made an out-patient, with instructions to continue the pressure for a considerable period. In all probability some further operation may be requisite.

Caries.—Mary Shaw, æt. 19, from Slaithwaite, was admitted under the care of Mr Wilks on the 16th March. Her fourth finger was much swollen, red, and exquisitely painful, and a small fistulous opening led down to the bone of the first phalanx, which was found in a carious state. The disease had existed ten months, and she could assign no cause for its appearance. There was likewise an indolent enlargement over the lower end of the ulna, which rendered the pronation and supination of the hand imperfect. In other respects she enjoyed good health. She felt desirous to have the finger taken off, which was accordingly done, and she went out well on the 6th April.

Ann Stead, 30 years of age, from Hopton, was admitted as Mr Robinson's patient for an affection of the foot. The ankle was discoloured, tumid, and painful, and the sense of fluctuation pretty distinct. The leg was œdematous nearly to the knee, and she could not bear the slightest weight on the limb. Although she looked florid and rather fleshy, her health was far from good. She had rested badly at night from the pain and feeling of distension in the foot, and she had had several smart febrile attacks. Blisters and various popular liniments had been used without benefit. An opening was made with the lancet, and a considerable quantity of bloody pus let out, and the bones were found extensively diseased. Great constitutional disturbance ensued, and the integuments towards the ankle put on an unhealthy appearance. As soon as the irritative fever had in some measure subsided, amputation above the joint was performed. Her recovery proved tedious, in consequence of sloughing, and the formation of matter in the stump, attended with much excitement of the system, but ultimately she went out well.

John Brook, aged 19, of Upper Holm House, came under the care of Mr Robinson on the 27th January. He was of spare habit, sanguine temperament, and decidedly strumous diathesis, and had lameness of the right foot, which was swollen and painful, and discharged a thin sanies from a small opening over the metatarsal bone of little toe. The bone was unsound. The lameness had only attracted his notice about ten weeks, and the discharge had existed six weeks. He had some strumous sores on his arms, suffered frequently from attacks of ophthalmia, and altogether was of very delicate general health.

An incision was made along the upper surface of the bone its whole length, and at each extremity of this another was made at right angles. The flap thus formed was turned aside, and the carious portion of the bone, comprehending half its length, readily taken off with the cutting forceps. For the first fortnight every thing promised well, and the wound healed completely; then, however, redness and swelling presented themselves over the adjoining metatarsal bone, and successively in several places on the arch of the foot. Free openings were made at these parts, and a seton inserted, and again he seemed to improve. But this was only for a short period. His countenance assumed an unusual degree of paleness; his pulse became rapid; his nights bad; and there was some abdominal tenderness and diarrhœa. These resisted every attempt at cure; and, under all the circumstances, amputation of the foot was not deemed advisable. He was therefore recommended to go into the country, and, should any amendment in his general health occur, to return and undergo the operation.

Cataract.—Thomas Entwistle, 48 years of age, entered during Dr Robinson's week for an affection of the eyes. He was of tall stature, spare habit, and sickly aspect. The vision of his left eye was completely lost, and that of the right so imperfect, as to incapacitate him from following his usual employment, (that of a weaver,) or indeed for walking out without a guide. The left lens was wholly opaque, and the right one slightly milky. In addition to this defect of sight, he had many strumous sores of long standing on different parts of his body.

The left lens was broken up, and he was put upon a course of sarsaparilla and iodine, and iodine lotions were applied to the sores. His looks improved rapidly, the sores healed, and his vision became so good, that with proper glasses he could again earn his own livelihood. He remained in the Infirmary about two months.

Charles Mettrick, aged 34, from Shally, had been blind of left eye for twelve months. The lens was opaque and the iris fixed and irregular. The vision of right eye was likewise considerably impaired, but no deviation from natural appearance was discernible. He had occasionally some confusion of head. He was put upon a course of alterative medicines, had blisters repeatedly to the nape; and the *Vinum Opii* dropped into the eye, under which treatment he recovered useful vision in the right eye.

Mary Carlton, aged 55, from Heckmondwiche, came under Dr Robinson for cataract of both eyes. She was unable to distinguish any one, however near to her. The opacity of left eye began five years, and that of right, two years previous to her admission. The pupils of both dilated freely and equally. On the 14th May, the left eye was operated upon, by breaking up the lens, and a month afterwards the operation was repeated. After this she regained a highly useful degree of vision, and went away full of gratitude. By the aid of glasses she could read her Bible with ease.

Diabetes.—William Hepworth, *æt* 37, admitted under my care on the 10th February He was of diminutive size, spare habit and rubicund complexion; complained of thirst, which nothing could allay; great debility; restless nights; and frequent micturition. This last symptom troubled him almost constantly; and he parted with large quantities of urine. His pulse was small, rather wiry, and not more than 76; tongue thickly coated, white and dry-looking; appetite good; skin hard and dry; indeed, he had had no sensible perspiration for a long time. The only pain he mentioned was a little across his loins. He could lie in any posture; bowels were open, and stools reported of natural appearance. He had only been aware of the increase in the quantity of his water for about three weeks; but for two or three months had observed his thirst to be intense, and his appetite voracious, and at the same time his strength rapidly to decline. He could assign no cause for his illness, but had been much addicted to liquor. He had measured his urine the week before his admission, and found it to amount to 10½ pints in the twenty-four hours.

11th, He had been cupped on the preceding evening over the loins to 10 *oz.* and had passed a comfortable night, and thought himself somewhat better. I prescribed 6 grs. *Pulv. Ipec. co.* with *Liq. Ammoniæ Acetatis*, thrice in the day; a scruple of rhubarb, and as much carbonate of soda, every second morning; the warm bath at 96, every other evening; and a flannel waistcoat in addition to a *cholera belt*, which he had lately put on.

14th, I found him cheerful. Drink 6 pints, urine 7½ in twenty-four hours; other symptoms were nearly as before. He had rather more uneasiness across his loins, his nights were variable, generally a good and a bad alternately. The same plan of treatment was continued, and he was again cupped. On the 15th, drink 8½, urine 10 pints, a gill of it evaporated, left ℥iii. of treacly residuum. On the 17th, the water was 8½ pints, but he seemed gradually to lose strength, and no perspiration could be elicited. He had used the bath at 100, and likewise the hot air bath, without in the least softening his skin. Two grains of ipecacuanha powder, and half a grain of calomel were added to his former medicines, to be taken thrice daily; and another flannel waistcoat was put on. After this, his urine and drink nearly corresponded; but his pulse got up, his tongue became, if possible, more densely coated, and he was slightly delirious in the night. On pressure along the lower dorsal and lumbar vertebra, he complained of some pain. His medicines were laid aside, a blister was applied to the lumbar spine, and he took the effervescent draught, with a gentle aperient. He continued, however, to get worse; his rambling became more continuous; his replies when spoken to were tardy and sometimes inaccurate; his pupils large and sluggish, and he had no appetite. In this state, he was removed by his friends on the 27th, and died, I understood, on the following day.

I deeply regretted my inability to obtain an examination of the body, as I have long been anxious to inspect minutely the base of the brain, and the *medulla spinalis*, in a few cases of diabetic subjects. Since Hepworth's decease, I have been informed by Mr Jones of Sheepridge, who had formerly attended him, that he was liable to fits of the epileptic kind.

Disease of the Joints.—Of the twenty cases of this kind, eight underwent the operation of amputation, and recovered well; ten of the others were cured or greatly benefited; and two went out as incurable, from being complicated with others complaints, which rendered amputation unadvisable. Of the eight operations, three were above the elbow, two above the knee, and three above the ankle. In seven of the cases, there were fistulous openings leading into the cavity of the joint, and extensive erosion of the articular cartilages, with in two, softening of the extremities of the bones. In one case, where patches of the synovial membrane remained, it was studded with irregular granulations of a crimson colour and firm consistence.

Out of the twenty patients, fourteen were males and six females; and one-half of the whole were under twenty years of age.

Elizabeth Stocks, from near Kirkburton, one of those who suffered amputation, died in the country six months afterwards of a pulmonary affection.

Thomas Inman of Farnley Tyas, a fine-looking boy, whose foot was taken off, gained the affection of all connected with the hospital, by his cheerful disposition and efforts to make himself useful. He was an orphan, and the parish his only nurse. On his leaving the Infirmary, a few benevolent individuals raised for his use a subscription, which is now in the Savings Bank; and the Earl of Dartmouth, whose hand is ever engaged in deeds of charity, directed his steward to have him put out to some respectable calling; so that I doubt not the boy, if spared, will make a useful member of society.

Enlarged Testicle.—Hiram Hirst, aged *circiter* 35, of Marsh, came under the care of Mr Atkinson, on the 30th December, for the purpose of having his left testicle extirpated. It was very large and hard, and filled the scrotum, so as to render the right side tense and elastic. He had little pain, except in the small of the back after exercise. The cord was thicker than usual, his general health good, although his countenance had something of the sallow hue. I had been consulted in conjunction with Mr Hudson, by this patient, in the June preceding. The testicle was then the size of a large orange, and indicated the commencement of the malady, about three months previously,—at least, he was not aware of it before that time. At first the increase in bulk took place very slowly; but latterly it had been much more rapid. No cause could be assigned for the disease. He had tried free leeching, various lotions and poultices, and active purging; and had worn a suspensory truss, without any perceptible benefit.

He then took mercury with sarsaparilla, and afterwards iodine, which was also applied externally, without any effect in retarding the enlargement. Nothing remained to be done but excision. It was some time, however, before he could make up his mind to submit to it; and, when he had done so, as he lived out of town, and was rather in poor circumstances, we recommended his getting into the Infirmary, where he would have greater attention and more comfort than at his own home. The operation was performed on the 6th January.

The testis weighed 11½ ounces, and, when laid open, presented a beautiful specimen of the hydatid disease. The vesicles varied from the most minute size to that of a large grape, and were generally filled with a transparent and nearly colourless fluid. In a few, the liquid was more gelatinous, and of a yellow hue. The whole were contained in small square compartments, formed by cartilaginous *septa* running across the mass. These septa felt gritty when divided with the knife. The cord, although very large, seemed free from disease.

For a few days after the operation, he complained much of pain in the thigh; was troubled with hiccup; and frequent desire to void his water; his nights were bad, and his pulse quick. These symptoms gradually yielded to treatment; and at the end of a fortnight, the wound was healed except the upper corner, and his pulse was under 90. Shortly, however, he again became worse; his pulse got up; his tongue became coated and rather dry; his water high-coloured; his nights unrefreshing; and his spirits much depressed. And about the middle of February, his pulse had reached 120, and he began to have slight delirium in the night. There was likewise some enlargement of the thigh; and on pressure over its upper third, he complained of pain. But there was neither discoloration, heat of skin, nor fluctuation. At the top of the incision in the groin, there remained a small opening, which put on a fistulous appearance, and discharged copiously. His strength declined, and his features looked sharp and expressive of suffering.

With such an assemblage of symptoms, it was clear that deep-seated mischief was advancing; and it was deemed advisable to troduce a small trocar into the most depending part of the thigh. No matter, however, followed its withdrawal, and the whole limb was enveloped in a poultice. Next day (18th Feb.) about ten ounces of good pus escaped; and in a few days after, four pints were evacuated at an opening made on the inner side of thigh. At this period his appetite was good, yet he slowly lost flesh and strength. The opening in the groin showed no tendency to close; and on pressing the matter in the thigh upwards it escaped at this place. At the beginning of March the whole hip of the left side felt boggy, and on a free incision being made, much bloody sanies was set free.

His emaciation was now extreme; voice husky; pulse 130; and he had lost his relish for solid food. He took, however, a bottle of wine daily, and five grains of quinine every three hours. On the 5th, he got up and dressed himself in a paroxysm of delirium; but on having an opiate administered, he again went quietly to bed. Extensive sloughing at last took place over the sacrum, and he was released from his sufferings on the morning of the 19th March. Two days previously, I had observed some tension of the lower part of the abdomen, and slight pain on pressure. During his long illness, the bowels had acted regularly.

Autopsy nine hours after death.—On laying open the different sinuses, it was found that they all communicated with each other. A probe introduced at one of the openings in the thigh readily made its way to the opening in the groin, and likewise to that on the hip, and to the sloughy part over the sacrum. The upper half of the *femur* was denuded of its periosteum and of a dark hue; and the soft parts surrounding it were all in a black sloughy state. On laying back the abdominal *parietes*, they adhered to the intestines all below the *umbilicus*. The intestines themselves were slightly glued together and beautifully injected, and here and there a speck of pus might be seen floating in a considerable quantity of serous effusion. On turning out the intestines, the peritoneum on the left side of the spine, and in front of the kidney, projected forwards like a large bag; and on touching it, a dark bloody or rather inky liquid spurted out through a ragged and discoloured opening the size of a writing quill. The posterior surface of the peritoneum all round this opening was dark-coloured, and the whole cellular membrane about the kidney was black and sloughy. The kidney was sound. No trace of the *psoæ* muscles was to be met with; but in their place a yellow, soft, curdy substance, which could be scooped out with the hand. About four inches below the kidney, two hydatids were attached to the vessels of the cord, one the size of a walnut, and the other of a pea.

Fracture. Twenty-one patients were admitted with fractured bones produced in the following manner. Four by getting entangled in machinery; three by falling off horses; three by falls when carrying heavy stones; two (old men) by falling from the foot pavement; two waggoners by falling under the wheels of their own waggon; one by a fall from a factory door on the fourth story; one, a painter, by falling from his ladder; one by falling from the outside of a chimney; one by falling over a butcher's dog when running at full speed; one by a fall into a stone-quarry seventeen yards deep; one by a cask of beer falling upon him; and one by wrestling. Many of these accidents were very severe. The majority, however, of the subjects were young, twelve being not above sixteen years of age, and made rapid recoveries. The proportion of these misfortunes caused by machinery, in a district where it so much abounds, is strikingly small, and not what we *a priori* should have looked for. I have asked several of my friends, both in and out of the profession, what ratio of the whole they would attribute to this source, and none have calculated upon less than one-half, and many upon two-thirds. Three of the cases proved fatal. Their histories I subjoin.

Francis Eastwood, æt. 40, came under Mr Wilks' care on the 24th April. He was a brewer's servant, and had just received a bad comminuted and compound fracture of his left leg, by a cask of beer falling upon it. The limb had been set by Mr Astin, near whose residence the accident occurred. On the third day after admission, the whole extremity was much swollen, and vesication presented itself over both *malleoli*. At the same time, the temperature of the limb was rather below the proper standard, and he rambled much in the night, his pulse was not above 80, and his tongue was clean. The soft parts around the seat of the fracture became loose and flabby, much putrid sanies escaped from the wound, and one or two pieces of bone were removed. His appetite failed, his desire for beer, of which he had been too fond, gradually abated, his strength sunk, and he died on the 10th May, sixteen days from the receipt of the injury. Amputation he all along declined.

William Sheard, æt. 45, from Littletown, was brought in a little past midnight on the 10th May, in a state of inebriation, with his tibia broken about three inches below the knee. He had fallen under his own waggon, and the wheels had gone over him. There was a wound across the outside of the knee, downwards and backwards, for about five inches, another down the outer side of the leg, eight inches in length, which gaped widely, and a third across the calf of the leg behind, three inches long, and rather deep. At the two latter wounds, the finger could be readily inserted beneath the integuments, and passed all round the leg. No communication could be traced with the fracture. He had lost much blood; his pulse was intermittent; and he laboured under slight cough of long duration. For some years he had drunk hard.

The wounds were made to approximate by adhesive straps, and the bone was put in apposition. On the second day, the integuments of the leg assumed a slight purple hue, the cuticle separated, and a blush of inflammation extended up the inside of the thigh. Round the knee, and on some places of the leg, the soft parts were boggy and crepitous. His tongue was dry, and his pulse 120. Wherever any bogginess or crepitation presented, punctures or small incisions were made, so as to allow free issue to the confined air and bloody sanies. He gradually became worse, the skin sloughed extensively, and it was evident that a deep slough would separate over the site of the fracture. His pulse rather diminished in number, but he had frequent attacks of dyspnœa, and his countenance assumed a haggard aspect. Under these circumstances, the limb was removed above the knee, as affording him the only chance, although a slight one, of recovery. The day after the amputation some hemorrhage took place from the stump, which readily yielded to the application of cold. His countenance became more animated, and his pulse fell to 96. On the 20th, when the stump was dressed, union had taken place except in a small part of the centre, and which gaped and looked black, from which the hemorrhage had issued. On the 22d, his pulse was 84, and intermittent, and he complained of uneasiness in the region of the heart. He died without a struggle on the 24th, having survived the accident a fortnight. No inspection could be obtained.

James Thorp, æt. 44, Marsden, admitted under Mr Robinson, 25th May. He was a fine muscular and well-proportioned man, a waggoner, who had fallen on the evening of the 23d under the wheel of his waggon, which had passed over his thigh. He remained all night at an inn, near where the accident happened, and was removed home, a distance of five miles on the following morning; and on the second day brought to the Infirmary. The leg and foot were everted, the whole extremity was swollen and cold, and the *femur* fractured a little above the condyles. There was a small wound both on the inner and outer side of the knee, through which a little cellular membrane protruded, and by which he was reported to have lost much blood. There was some discoloration of the integuments about the ankle; but he attributed it to a former injury. The constitutional disturbance was great, his respiration short and hurried, pulse small and rapid, tongue dry, and he could obtain no sleep. On the 26th, all his symptoms were aggravated; the limb was cold and without sensation; the foot and leg blue; and a blush of inflammation of dark mahogany colour, extended up the inner side of thigh, into the groin. On the 27th, there was vesication over the inner side of leg, and outer side of thigh; pulse 144, and much heaving of the chest. He died on the morning of the 28th. The thigh was inspected; and the femoral artery and vein were found completely divided at the seat of the fracture.

Hydrocele.—Benjamin Townend, æt. 65, of Longwood, and Matthew Kitchen, æt. 37, of Bradford, were both admitted on the 20th January. Townend was tapped by Mr Wilks next day, and the solution of sulphate of zinc injected. He went out well on the 3d February. Kitchen had laboured under the complaint for about six years, during which period he had been tapped seventeen times, but no injection used. Considerable ecchymosis of the scrotum had taken place at last tapping, and had not altogether disappeared. Lotions of muriate of ammonia and poultices with iodine were applied; and in February about twelve ounces of an inky fluid were drawn off by Mr Robinson, and the zinc solution afterwards injected. He made an excellent recovery, and went away highly gratified with the prospect of a permanent cure. He called at the Infirmary in July, to say that he continued perfectly free from complaint.

Inflamed Hand.—Joseph Wood, æt. 23, from Almondbury, came in, January 27th, as Mr Robinson's patient. The whole

hand, wrist, and arm were greatly swollen, tense, and exquisitely painful. His tongue was coated, he was feverish, and could obtain no rest. Three weeks previously he had run from Aldmonbury to Elland, in pursuit of thieves, a distance of six miles, by which he was greatly overheated, and his clothes were dripping with perspiration. In this state he stood on Elland Bridge, exposed to a strong current of air, until he became cold and shivering. Two days afterwards he was attacked with rigors, followed by the affection of the hand. He had made use of no remedies but poultices. Four incisions were made in different parts, and poultices again applied. He got immediate relief. A few more incisions were afterwards required, and he recovered completely.

William Rhodes, æt. 52, from Meltham, admitted by Mr Robinson for an affection similar to the last. The pain and tension were particularly great in the palm of the hand, and along the middle-finger, at the root of which, in the palmar aspect, there appeared to have been a small wound. This was received a fortnight before whilst breaking into a mill, which was on fire, and in which some of his family were asleep. Four incisions were made, as in the preceding case; they bled largely, and he was soon again at work. A precisely analogous case occurred amongst the out-patients, brought on by the bite of a cat.

In January 1829, I attended, along with Mr Atkinson, a severe example of this disease. It occurred in the person of a gentleman of robust habit, and in the prime of life, who, on Friday the 26th December 1828, whilst attempting to hang something upon a new hook in the ceiling, overbalanced himself, and the hook penetrated his fore-finger, in the palmar aspect, at the proximal termination of the first phalanx. On the second day after the accident, he had rigors, the finger became painful and swollen, and the swelling gradually extended upwards. I saw him on the 2d of January, five days after the attack of rigors. The arm was then immensely enlarged to the shoulder-joint, and generally tense and red; various parts pitted on pressure, and had a boggy feel; and there was slight vesication a little below the bend of the fore-arm. On the back of the hand there was a copious purulent discharge, from an opening which had been made three days before, and likewise some from the wound inflicted by the hook. He had great pain, the tongue was white, thirst intense, pulse quick but soft, bowels open, night bad. With regard to treatment, poultices had been applied after free leeching; but he had derived most comfort from a tepid camphorated lotion.

I have stated that an opening existed over the back of the hand; another was made over the wrist; a third half way up the fore-arm; a fourth at the elbow; and lastly, one about the centre of the humerus. None of the incisions exceeded two or two and a half inches in length. The cellular membrane was extensively disorganized, and in some parts sloughy, and a probe readily passed from one opening to another. The whole limb was enveloped in a poultice, and next day, considerable purulent discharge was found to have taken place. The night had been passed without much pain, and also without sleep. On minute examination, some bogginess was detected on the lower surface of the humerus, and likewise of the fore-arm. Free incisions were effected at both places, from which much sanious fluid escaped: and the probe passed from the openings thus made to those made previously. On the following day, the extremity had greatly diminished in size, and become pale, and his countenance had also a shrunk appearance; the purulent discharge continued, and shreds of cellular membrane came away. From the shrinking of the arm, the openings scarcely appeared one third of their former magnitude. Tonics and stimulants were now allowed, and he recovered rapidly. The second and third phalanx of the wounded finger became black and dry, and ultimately fell off.

These are all examples of the *diffuse inflammation* of the cellular membrane, so well illustrated by the late Dr Duncan *Secundus*. Some might, perhaps, class them under the head of *Erysipelas phlegmonodes*; but the cellular membrane was clearly the principal seat of the malady; and *early and free incisions* were found by far the more effective treatment.

Necrosis.—Joseph Woodhead, æt. 12, from Slaithwaite, came under Mr Atkinson's care for an affection of his leg. It was greatly enlarged, and much bent outwards. Several openings led down to the tibia, which was in a state of necrosis for nearly its whole length. The *sequestra* was broken, and in some degree loose; his pulse was quick, and general health much reduced by long suffering. His friends would not permit any operation for his relief, and he went out in a weak state.

Betty Moss, æt. 21, Honley Wood, admitted by Mr Robinson for lameness of the left leg. The knee was somewhat stiff; and close to the *patella*, over the head of the *tibia*, there was a large ulcer of irregular surface and unhealthy aspect, surrounded by considerable swelling, and often extremely painful. The lameness had existed two years; and about eight months previous to her admission, an abscess had burst in the site of the ulcer. By rest and simple dressings, the ulcer contracted to half its former magnitude, and then it became stationary. On being filled with melted wax, however, it again healed rapidly, until only a very small sore remained. All along she complained loudly of the pain; and some roughness of bone was detected at the bottom of this small sore. On this a free incision was made, and several minute portions of bone afterwards escaped. Still no amendment took place;—but, on the contrary, the disease encroached more and more upon the knee. Her spirits drooped, and health suffered materially. The limb was therefore removed. The joint proved perfectly sound, but the disease of the tibia reached to within two lines of its extremity. From this point, a piece of dead bone of a conical form, with its apex directed to the ulcer, extended down the centre of the shaft. Although loose, it could not from its shape be extracted, without a longitudinal section of the tibia. It measured two and a half inches in length. Soon after the operation, she suffered an attack of *peritonitis;* and the stump was long in healing from exfoliation of the bone: ultimately, however, she went out well.

Joseph Yates, æt. 23, from Cleckheaton, admitted by Mr Wilks for an affection of the hand. There were tumefaction and discoloration over the metacarpal bone of the fifth finger, which was in a state of disease. Some unhealthy matter flowed from a small fistulous opening, near its proximal extremity. The complaint had troubled him for twelve months. The bone when removed measured fully an inch in diameter, and contained a loose *sequestra* in its centre.

Paraplegia.—Robert Dyson, æt. 49, from Marsden, came in as my patient, on the 15th November. He was of middle size, melancholy temperament, and rather emaciated habit of body, and complained of impaired power of motion in his lower extremities, so that he walked, or rather dragged his limbs, with great difficulty. The loss of power was greatest in the right side. His arms were likewise affected, although in a much less degree, and the right more than the left. The sensibility of the skin was diminished; but occasionally he had a troublesome *prurigo.* In the night, his legs started much, and his sleep was unrefreshing. He had formerly suffered from pain of head, but not latterly. His appetite was good, tongue nearly clean, bowels open, urine variable, at times copious, and at other periods scanty, and voided with difficulty; when copious, he always found himself best. Pulse 66, and soft; slight pain about the lumbar region. He had observed the affection for three years, and for ten or eleven months had been unable to follow his employment. No cause could be assigned for the illness. He had been under the care of several practitioners, without receiving any benefit. He had also, been treated by myself, as an out-patient, for some months; and had tried cupping, with blisters and setons in the course of the spine; mercury so as to affect the gums; opening and tonic medicines, and strychnine. As he lived, however, seven miles distant, the latter medicine had not a fair trial; and it was principally with the views of pushing it as far as could be done with safety that he was taken into the house.

The strychnine was accordingly resumed, and continued until it produced paroxyms of rigidity of the lower jaw, and both upper and lower extremities, continuing for a short period and returning several times in an hour. It likewise produced pain of stomach and loss of appetite, and rather impaired than increased his locomotive abilities. He never exceeded one third of a grain three times a-day. After the strychnine was laid aside, he tried the application of moxa, caustic issues, electricity, and iodine both internally and externally. Whilst using the iodine, he improved a little, and his two months having expired, he went home, with instructions to persevere in the use of the medicine some time longer. In this patient, it is probable that the disease not only implicated the greater portion of the *medulla spinalis*, but also the base of the cerebral mass.

I have given the strychnine in many cases of paralysis, and I regret to state, that when the malady has been of any duration, I cannot call to mind one in which it has proved beneficial. When exhibited in recent cases, it is difficult to decide what share, if any, it may have had in producing amendment.

The other paraplegic patient, Mary Barret of Netherton, came under the care of Dr Walker. Her case admitted of no relief, and therefore she only remained a short time in the Infirmary.

Rigidity of the Knees.—Elizabeth Palmer, æt. 10, admitted under Mr Atkinson, January 27th, for rigidity of both knees. The legs were bent to nearly right angles with the thighs and the knee-joints allowed only of very trifling motion. She was thin and of delicate appearance, but in tolerable health.

I had attended this poor girl, in the end of the preceding August, for a febrile attack, in the course of which she was seized with erysipelas on the right thigh. It spread upwards; and a large slough formed over the *trochanter major*, which was followed in a few days by another, fully four inches in diameter, over the opposite trochanter; then by one over the outer ankle of left leg; and lastly, by an extensive one over the sacrum. Simultaneously with the formation of these sloughs matter collected on the arch of each foot. All these places discharged profusely a thin unhealthy fluid, and from several of them frequent hemorrhage occurred. Indeed, the girl's sufferings almost exceeded any I had ever witnessed, especially on being moved to have the sores dressed. Her screams might then be heard over the whole neighbourhood; and nothing but large doses of opium afforded her the least relief. It was the middle of November before all the sloughs had separated, and even then there was very little appearance of any reparative process. Her appetite, however, never failed, and she consumed large quantities of solid food; and her bowels, notwithstanding the constant use of opium, acted regularly. At length, however, the sores slowly cicatrized; but from the agony she suffered on the slighest motion, she had retained during her long confinement nearly one posture, the consequence of which was the affection of the knees above described.

One of the extremities was forcibly straightened as much as possible, and bound upon a board for a night, as recommended by Dr S. Smith of Leeds. This brought on an erysipelatous affection of the knee, which was some time in subsiding; and the cure did not appear at all speedier than in the opposite limb. Passive motion, and frictions with emollient liniments, were perseveringly continued for upwards of four months, and she went out able to walk tolerably; but still the knees had not altogether regained their natural latitude of motion.

It may be worth stating, that in October, whilst I was visiting this girl, who lived in a low, crowded, and ill-ventilated part of the town, a medical friend was likewise in attendance upon a case of erysipelas of the face in the same neighbourhood.

He had at the same time, and in the same district, two puerperal cases, which proved fatal. One of them I saw along with him. She laboured under the congestive form of the disease, according to the division of Dr Lee; and no remedies seemed of the slightest service to her. She had rigors the day after her accouchement, and died on the 6th day.

The other case took place in the person of a poor Irishwoman, who had an erysipelatous redness over the abdomen, and complained of its burning heat for two days prior to her delivery. This redness continued equally distinct the day after her travail. She would allow of no means being used for her recovery, but drank freely of porter and other liquors, and sunk on the third day after labour. The weather at the time these cases occurred was particularly mild for the season, and foggy, with occasional days of heavy rain. Typhous fever likewise prevailed in several places.

Scirrhous Mammæ.—Fanny Peace, æt. 46, from Lyley-Hill, admitted during Mr Robinson's week, for a tumour in the left breast. It was on the outer side of the nipple, hard and unyielding, and of the size of an egg; moved freely on the pectoral muscle; was subject to lancinating pains; and had been in progress two years. The skin had its natural colour, and was not adherent. The catamenia had not been very regular, and her general health was delicate. The tumour was excised. It cut firm, and somewhat gristly; its structure was perfectly solid and homogeneous throughout. She had a good recovery. In connection with this subject, I may here introduce the following case.

Rachael Tate, æt. 42, Newsome, came into the Infirmary on the 10th February. Deep in the left axilla there was an irregular, unhealthy-looking ulcer, with edges of an unyielding, stony hardness. It emitted a fetid odour, was at times very painful, and had existed about six months. Her arm was œdematous and rather numb, and could not be moved but with the utmost caution; her countenance was sallow and exsanguious; her pulse small and quick, and her nights bad.

In July 1830, I had examined this patient, at the request of the family with whom she then lived as domestic servant. She had a tumour the size of half a large orange in the left breast. It was hard, and subject to darting pains, loosely attached to the pectoral muscle, but firmly adherent to the nipple and surrounding skin, which possessed their natural appearance. She dated the commencement of the complaint about three months previously, and could assign no cause for it. Her catamenia were regular, and her general health good, although her countenance had the dirty straw-coloured hue, so characteristic of malignant disease. A cousin had been carried off by cancer in the breast. I recommended immediate excision. This she declined, and wished to make trial of other means. I accordingly prescribed large doses of sarsaparilla, with frequent leeching, and frictions with iodine ointment. The tumour, however, gradually enlarged, and became more painful; and the integuments over it put on a bluish and puckered appearance; the nipple became retracted; and her health declined.

In this condition, she left her situation, and was admitted as a Dispensary patient; and the breast was removed by Mr Robinson on the 13th September 1830. It contained the scirrhous structure. She recovered favourably, and remained in tolerable health until the hardness in the axilla attracted her attention. She was kept in the hospital nearly three months, during which she made trial of every application, curative and palliative, that could be suggested, but all without avail, and she went out in a hopeless state.

I have not as yet met with one case of true *scirrhous mammæ*, in which a permanent cure has been effected. After excision, the malady has invariably returned in some part of the system, and generally within two years. Some few have escaped for three or four, but sooner or later all have yielded to its ruthless grasp. Still the operation, as a mere temporary remedy, is useful; it perhaps lengthens existence a little; at all events it renders it more comfortable, and is therefore, in many cases, advisable. Some years ago, Dr Butter of Plymouth, related in one of the Journals an example of permanent cure of a patient afflicted with *scirrhous mammæ*, residing in this neighbourhood, and on which, I believe, he had operated. At the very time, however, of publication, the woman was numbered with the dead, in consequence of a return of the disease. With this, of course, Dr B. was unacquainted.

Spinal Irritation.—Susan Crowther, æt. 25, of short stature, dark complexion and hair, sickly aspect, and emaciated habit, was admitted under my care October 13th. She complained of severe pains in different parts of her back, at times shooting into the sides and stomach; almost constant headach; vomiting of nearly all the *ingesta*, sometimes immediately, and at other times in half an hour or longer after being swallowed; and occasionally, although seldom, she passed a day without vomiting at all. Her thirst was constant; appetite bad; the tongue white; skin cool; pulse in horizontal position, 80, and soft, but much accelerated by the slightest exertion; nights sleepless; catamenia regular; the bowels obstinately constipated, often not more than one stool per week. She had pain on pressure over the epigastrium, and about the centre of the dorsal spine. Her illness, of which she knew no cause, was of three years' duration; and nearly the whole period she had been under medical treatment, and had tried a great variety of remedies, with only very temporary benefit. Bleeding had frequently been practised along the spine and over the epigastric region, and blisters had been applied to the same parts. A seton had likewise been inserted on each side of the spinal column where it was tender on pressure, and she had taken purgatives, salines, and tonics, in almost every form. At times she had kept the recumbent posture for weeks together. A bougie had also been introduced up the rectum, on the supposition that a stricture might be met with. She remained in the Infirmary until the 30th of December, and every thing that either I or my colleagues could suggest was attempted for her relief. The local bleeding and blisters were again occasionally had recourse to for the mitigation of the pains in various parts; enemata and opening medicine of great variety, and in combination with tonics; citrate of magnesia in a state of effervescence; anodynes in every shape; hydrocyanic acid; strychnine, various liniments, a seton at the *scrobiculus cordis*, were all made use of without relieving any of the urgent symptoms. The vomiting continued severe, the constipation obstinate, and the pains distressing. She was, in short, on the 29th November, much the same as when she entered the house.

I then prescribed twenty drops of oil of turpentine in sweetened *aqua menthæ*, thrice a-day, and the application of tincture of iodine along the painful part of the spinal column. From this plan she experienced great and immediate relief. She only vomited once during the remainder of her stay; the bowels generally acted regularly; her pains were greatly better; her appetite improved; and her nights were comfortable. She retained her improvement for some months after leaving the Infirmary; but, I regret to add, has since relapsed nearly into her former condition. The soluble state of the bowels after commencing the use of the iodine and oil of turpentine, is worthy of notice, which I attribute solely to the former medicine, from having observed in several other cases, where it had been applied over a large extent of integument, that the individuals had attacks of diarrhœa, which did not give way to the ordinary treatment, but which ceased on discontinuing the application.

Spinal irritation, on which, I think, the sufferings of S. Crowther were mainly dependent, is a term which has only of late years come into use. It is not a satisfactory one, but I am unable to suggest a better, and have, therefore, adopted it. Drs Brown, Darwall, and Griffin, and Messrs Tate, Teale, and Whatton, with perhaps others, have recently written upon the subject; but none of them make any allusion to the work of my excellent friend Dr Bradley of this place, who, although still a sojourner upon earth, is in "the sere and yellow leaf," and now equally deaf to eulogy and censure. His work * appeared in 1818, and was, as far as I know, the first that directed professional attention to the multiform and Protean complaints which originate in, or are intimately connected with, the vertebral column. It has done much to dispel the apparent confusion and intricacy which surrounded these affections. I say apparent, for it cannot be doubted that each portion of the spine, as well as each texture of the parts entering into its composition, has, when in a morbid state, its pathognomic signs and sympathies, which close observation and reflection will not fail to develope. Although, therefore, Dr Bradley's work is the oldest, I believe it is still, *longo intervallo*, the best book on spinal irritation or *neuralgia.*

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* Observations on a Stridulous Affection of the Bowels, and on some Varieties of Spinal Disease, by J. Bradley, M. D.

Whilst, however, I give my friend great credit for his accurate and truly practical information on this difficult subject, I differ widely from him in the treatment of the *lateral twist*, as laid down in the same volume. Indeed, during the last six or eight years, as I may show on a future occasion, this department of therapeutics, formerly given up to the charlatan, has undergone much improvement; and the steel casings and collars have happily given place to more rational plans of cure.

Spinal irritation is frequently dependent on curvature;—indeed, I believe curvature rarely continues long without inducing irritation in some part of the column;—and when brought on by this cause, the soreness on pressure will generally be found either at the upper or lower termination of the curve, for there the angle is usually most acute. Distortion, it is well known, is much more prevalent in females than males, and as it is often a cause of irritation, it necessarily follows, that the latter is most frequently met with in the fair sex. When, however, it is unconnected with deformity, it, in my experience, attacks the male as often as the female, and generally selects the nervous temperament, the strumous diathesis, and those who are little in the open air, and whose employment is of a sedentary and monotonous description. In many cases no very obvious cause can be assigned for the malady, but frequently, and especially in males, it can be traced to external violence, such as a fall or blow, or sprain received long before, and that often of so slight a nature as to have been almost disregarded at the time. Should the system, however, become enfeebled by long confinement, by deficient nutriment, by acute suffering, then it is that disease shows itself in the part weakened by the previous injury, and which, in all probability, the patient had forgotten until closely interrogated on the subject.

When called to persons labouring under any form of this disease, they will generally tell us that they can scarcely describe their sufferings, they are so various and variable; that one day they have one complaint, and next day a different one, and often a good day and a bad one alternately; and that they have tried many plans of treatment with very equivocal advantage. The complexion of such individuals is generally of a peculiar dirty pale or sallow hue; sometimes, however, white as alabaster, with blanched lips and heavy eyes,—in short exsanguine and death-like. The sensibility to cold is extreme, and there is often a feeling as if drops of cold water were trickling down the back. The hands and feet can rarely be kept comfortably warm; the appetite is poor, unless there be a feeling of want and sinking at the *scrobiculus cordis*, which is not unfrequent, and which the sufferer endeavours to allay, by almost constantly taking some kind of nutriment. The bowels are seldom regular, usually costive, often obstinately so; the nights are unrefreshing, and the sleep disturbed with hideous dreams. The pulse is in some unaffected, but generally ten to twenty above its natural number; and the tongue in all cases is more or less coated. Pain in the back is often not a prominent symptom, and by many will never be alluded to; but there is usually pain of the side or front of the body, opposite the tender part of spine; and great lassitude and disinclination to exertion of every kind is commonly met with. Whatever pains the patient may complain of, are aggravated by exercise, and generally alleviated or altogether removed by keeping the horizontal posture; hence they are seldom troublesome in the night.

Such are a few general symptoms, varying, however, greatly in degree, which will be recognized in almost every case of this disease, in whatever portion of the column it may be seated; and, in addition to these, we shall have others more immediately depending upon the locality of the complaint. The organs nearest the affected part suffer first; they become disordered in their functions, and very prone to inflammatory seizures. When the cervical spine is the seat of disorder, we may expect vertigo or pain of head; pain sometimes across the root of the nose and orbits, or over one superciliary ridge; throbbing and noises in the ears; weakness of sight; and perhaps hoarseness or aphonia, or some stiffness about the muscles of the neck. When the thoracic spine is implicated, the patient complains of pain running along the ribs, or obstinately fixed to one spot in the side *(pleurodyne;)* or at the sternal extremity of the clavicle; or in the breast, and occasionally darting down the arms. And I have often met with cases of cough, generally of the hollow ringing kind, and disordered action of the heart, dependent upon spinal tenderness, and perhaps some little deviation of the vertebræ from their natural position; at least they have resisted all the ordinary remedies, and have yielded readily to such as were calculated to restore the spine to a healthy condition.

That the convulsive affection of children described by the late Dr Clarke, and more recently by Mr North and others, is caused at times, perhaps generally, by spinal disorder, the case which I shall subjoin will go far to establish. Should the irritation be still lower down the column, the abdominal organs will suffer. Various pains of the stomach, tenderness of the epigastric, or round the hypochondriac region, and occasionally obstinate vomiting, will be found coexistent with tenderness of the spine opposite, which will cease on this tenderness being removed. I attended with Mr Robinson a case of hæmatemesis and constipation, which proved exceedingly obstinate, and returned again and again, until spinal tenderness was detected in the lower dorsal region, the removal of which cured the disease.

Upon the whole, spinal disorders claim much more attention from the profession than they have yet received. Many anomalous and *metastatic* ailments, will be found connected with disease of this part of the frame; and I indulge the hope, that a more correct knowledge of its pathology will lead to more fixed and more efficacious therapeutic principles, in several important maladies. Of this kind I may mention gout, rheumatism, chorea, many neuralgic affections, and some kinds of convulsions, of which latter complaint I adduce the following example.

"Master R., aged four months, and apparently a healthy and lively child, but of a fretful disposition, was in the summer of 1816 attacked with more frequent fits of crying than usual, particularly in the night. These were attributed to a disordered state of the bowels and digestive organs, and which seemed, for a few weeks, to admit of some relief from the use of emetics and calomel. At the expiration, however, of this period, it was observed, that, in addition to these fits of crying, when he awoke from sleep, there was an evident sense of suffocation for a moment, but as soon as he cried freely, this affection disappeared.

After continuing in this state, with little variation, for two months, the complaint began to assume a more aggravated character. Inspiration was now not only further impeded for six or eight seconds, but attended with a squeaking or stridulous noise, which sometimes resembled the crowing of a cock, and which always terminated by crying. The attacks, which at first were principally confined to the time of awaking, were soon observed to be more frequent, by returning in the intervals of sleep. All the secretions, notwithstanding, proceeded naturally, and the child gained flesh.

Hence, for several weeks, little alteration was apparent; till at length a new symptom supervened, in the form of a convulsive affection of the hands. The thumb was drawn into the palm of the hand, whilst the fingers were stiff and extended, or rather reflected or thrown somewhat backwards. This symptom, after continuing a few days, abated; but soon after returned, along with convulsions of a more general and violent character, which occurred for a month, once a week, at certain periods; but afterwards were more frequent, so as to come on twice or three times a week, for a short time; and soon after, even daily or twice a day, for ten weeks or three months. These were preceded by the above train of symptoms, which terminated by a strong expiration and crying for a few moments, but instantly after, the child stared as if frightened at something; the pupils became dilated, and in a few moments the eyeballs became somewhat distorted and fixed, the head and shoulders thrown back, his face purplish or blue, and the whole body stiff, and on the stretch, and respiration suspended; but in a short time the spasm abated, with a free expiration. The face now became paler; he moaned for a while, and afterwards fell asleep. Notwithstanding the general spasm thus ceased, yet it was often observed, in the intervals of these attacks, that the thumb was still drawn or inflected into the palm of the hand. These formidable symptoms supervening to those already stated, and continuing for such a length of time, now created great alarm and anxiety for the safety of the child.

Emetics, calomel combined with jalap, opiates, and other antispasmodics, were administered with no advantage. Calomel alone, however, when given in doses of three or four grains, twice a-day, for two or three days in succession, seemed the only remedy that had any effect; therefore all others were laid aside.

In this state was the little sufferer when I again visited him, and, for the first time, had an opportunity of clearly inspecting the state of his tongue, which at the root was furred for the space of half a sixpence, and of the lemon-coloured hue. His appearance, and the circumstance of the child not using his legs as much as was expected, induced me to suspect some spinal disease; and on repeated examinations, I found on pressing on the third or fourth dorsal vertebra, that he always cringed and cried; but there was neither deformity nor any discoloration of the skin.

The medical gentlemen now present were immediately satisfied of the existence of irritation in the part, and, in addition to the calomel purges, four leeches, at the suggestion of Dr Turnbull, were applied to the part; and this local depletion, in the language of Mr Robinson, a surgeon in this town, and father to the patient, and to whom I am under obligation for some of these particulars, "acted as a charm," as he never afterwards had any return of the fits, except a slight one, a few hours after the application of the leeches. In two days this remedy was again resorted to; and henceforth the child has continued free from complaints to the present time, at which he is eighteen months old; excepting about two months after the cessation of the fits, some constitutional irritation arising from teething, of which nothing had appeared during his illness, although his father had lanced his gums several times, with the view of obviating increased irritation,—but not for some weeks previous to the application of the leeches.

During this long period of indisposition, the child often appeared flushed and feverish, and perspired freely both night and day, on awaking from sleep, especially about his head and breast; and, notwithstanding there were no decided symptoms of dentition, his stools were always of a green colour, and appeared to be voided with great pain, and more particularly in the middle and latter stages of the disease, as the child always cried violently on every effort to void his stools, and nearly in the same degree in any position in which he was placed. These dejections, and the aliment taken, seemed to have no effect in accelerating a return of the fits; neither did any evacuations appear to be the consequence of the latter, excepting towards their termination, when they were succeeded by several copious motions.

It must now occur to the reader, that this is a case of those peculiar convulsions so accurately described by the late Dr Clarke in his treatise on the diseases of children, and erroneously denominated by some the chronic croup, and which this author attributes, as well as all other convulsive affections, to some organic disease of the brain, either directly or indirectly. This case, however, cannot be referred to this source, as the proximate cause appears indisputably to have been in the spine; for here it was proved, by the evidence of the senses, that local irritation did exist there, and, from being abated by the leeches, all the symptoms vanished.

Another circumstance worthy of attention is the violent screams, or agony, of the child, when in the act of straining at stool. Dr Clarke sometimes attributed the accession of the fits to straining. I do not know that any other convulsive paroxysm is produced from such a cause. An obvious question now arises as to the cause of this agony when in the act of straining? Is not pain the natural answer? Then the next question is, where was this pain situated? Most probably in the spine. Since it has already been proved to exist there, from mechanical pressure externally, why not a similar pain be excited by a deep inspiration elevating the ribs, and consequently giving motion to them at their articulation with the spine? All this, however, is hypothesis. The best practical hint elicited from this case, is, under the like circumstances, always to have an eye to the spine."

The above case and remarks are from the work before mentioned, and I could add several others of a similar description. The subject of the preceding narration is now a fine healthy youth. Two or three years ago, however, he had fits of confusion in the head, attended with difficult and imperfect pronunciation of words. When seized in this way at school, his companions generally laughed at his adroitness in mimicking a stutterer, as they supposed, for their entertainment. Tenderness was again found over the upper dorsal vertebra, and on this being removed, the complaint ceased.

Stricture of the Vagina.—This occurred in the person of a healthy-looking young woman, who was married, and whose first accouchement had taken place about twelve months prior to her admission. It had been very tedious and severe, and was followed by profuse purulent discharge. The stricture was situate at the external vestibule; and seemed to consist of a thin membrane, as if a continuation of the external integuments, which closed up the passage, with the exception of a small opening in the centre scarcely large enough to admit the point of the finger. The edges of this opening were exceedingly tender, and bled on the slightest touch. No marital intercourse could take place. The stricture was divided with the knife by Mr Robinson, although not so completely as he desired, and a tent introduced. She went out in a few days.

Tumour—Rebecca Taylor, æt. 15, from Paddock, taken in by Mr Atkinson, on January 6th, for a tumour on the back. It extended from the *vertebra prominens* of the neck, five inches down the left side of the spine, and measured about three inches in breadth. It had a soft, doughy feel; and the skin at the upper part was red and puckered, and exquisitely tender. The complaint had existed six months, and was gradually attaining a greater magnitude. A year and a half before, Mr A. had removed an analogous tumour from the same site. Excision was again performed. The morbid growth was found to penetrate deeply among the *multifidus spinæ* and partly beneath the *scapula*. It proved of the pancreatic species, and although it seemed all taken out, I think it probable it will reappear.

Elizabeth Worth, æt. 17, admitted by Mr Robinson, on account of a tumour on the left side, just below the scapula. It was as large as a turkey egg, moveable, and free from pain. Its progress had been at first slow, but latterly more rapid. It was taken out, the fibres of the *latissimus dorsi* being first divided, and was found to be an encysted tumour of the melicerous kind.

Ulcer.—Seven cases were admitted. One of these, a case of cancerous ulcer, I have already detailed. The others were all males, and, with the exception of one, which I subjoin, presented nothing peculiar. By far the most efficacious plan in old ulcerated legs seemed filling them up with melted wax and turpentine.

John Scholfield, æt 69, from Deanhead, admitted during Mr Wilks' week. He was of remarkably spare and exsanguine habit, and had an extensive, foul, and ragged ulcer over the metacarpal bones of the fourth and fifth fingers, and extending up the wrist, and round into the palm of the hand, nearly to the ball of the thumb. Its surface was irregular—some parts very prominent, and others deeply excavated. It had commenced like a small wart upwards of twelve months before; and continued steadily to extend in every direction. He had tried abundance of remedies without any benefit. The hand was amputated; and after the formation of matter near the elbow which greatly retarded recovery, he went home in tolerable health.

Wounds—Matilda Riley, æt. 18, came under Mr Robinson's care, on account of an injury she had received on her arm. She had fallen upon some broken pot and cut her right fore-arm deeply in a slanting direction, a little above the wrist. The radial and ulnar arteries and two small branches were divided; and the hemorrhage was considerable. The vessels had been secured, and the wound closed, by Mr Sargent, previous to her being sent to the Infirmary. Her health prior to the accident had not been good, and considerable constitutional excitement ensued. This, however, subsided under proper treatment; the arm went on favourably, and she was made an out-patient on the 6th Deeember.

Mary Fawcett, æt. 8, of Denby Grange, admitted by Mr Wilks. A fortnight before her admission, a table fork had been thrust into her right eye, at the inner and lower edge of the cornea. She had considerable pain deep in the orbit, the sight was gone, and the pupil filled up with lymph of a straw-colour. The iris also had a coating of white upon it. She improved slowly under frequent leeching and the use of mercurials, and was made an out-patient on the 2d of March. About one-half of the pupil was clear.

Art. V.—*Observations on the Employment of the Marchantia hemispherica in the Treatment of several forms of Dropsy.* By Thomas Shortt, M.D. F.R.S.E. Fellow of the Royal College of Physicians, Edinburgh, and Physician to the Royal Infirmary and Fever Hospital, &c.

In the treatment of dropsical affections it is of importance to ascertain if the urine is changed by heat. If it coagulates, and is specifically lighter than natural, disease of the kidneys may generally be inferred; whereas if it continues clear, or becomes so from a turbid state on being boiled, and if its specific gravity is high, better hopes of relief or restoration to health may be entertained; since then there is less chance of the kidneys being organically affected. In the former case experience has pointed out the superior efficacy of blood-letting and *digitalis* liberally given; whilst in the latter mercury and squills have been found more beneficial, particularly when aided in obstinate cases by purgatives, sudorifics, and diuretics, such as *elaterium*, Dover's powder, the acetate of potash, sweet spirits of nitre, gin, decoction of broom tops, and cream of tartar, which, in curable cases, is probably one of the most valuable means we possess. In dropsies from imperfect absorption, where the action of the heart and arteries is languid and feeble, the mental and bodily powers depressed, accompanied by sallowness of the skin, even in the early stages of the disease, short dry cough, or breathlessness excited by the most trifling exertion, unaccompanied by disease of the heart, loaded tongue, and high-coloured scanty urine, these remedies require to be combined with tonics. The same treatment may also apply when the effusion arises from laxity of fibre or deficiency of the red globules of blood, as marked by whiteness of the complexion, with more clearness of the skin than in other cases; paleness of the lips; the mental faculties not being weakened in proportion with the powers of the body; the tongue being unusually clean, and at the beginning of the complaint there being neither cough nor breathlessness on making exertions and the urine being pale and watery. The anasarca, too, shifting from one part of the body to the other, according to posture, and pitting more deeply on being pressed than in other cases, forms a similar indication.

Dropsical affections, however, are symptomatic of so many different causes, that, notwithstanding the great variety of means in use for their cure, they are more usually fatal than other diseases, from long continuance in many instances, and from being generally connected with extensive organic visceral disease, producing obstruction to the free circulation of blood through the system at large. While such cases admit only of temporary relief, in others the fluid may be evacuated, and life may be prolonged by the proper employment and combination of remedies. But having been frequently disappointed in the treatment of dropsy by the unsuccessful results of the various means of cure in general use, and having often seen the deleterious effects of mercury and digitalis in some constitutions, more especially those with a strumous taint, I was induced to try the effects of liverwort,—a remedy often beneficially employed in such cases by the lower orders in Ireland,—on accidentally hearing of its power as a diuretic in several remarkable instances from an individual who had personally witnessed its efficacy.

This plant, a drawing of which is annexed, consists of spreading leaves of a leathery crustaceous matter, cut not very deep into lobes, entire about the edges, Fig. 4. It grows in almost every country, abounding chiefly, however, in moist and shady places, and on the banks of rivers, and is to be met with at all seasons of the year, but is supposed to be in its greatest vigour about the end of autumn.

I have now been in the habit of employing liverwort for several years in dropsical affections. In many cases it has been astonishingly successful; but it has, like other diuretics, failed. I cannot say, having frequently given it in decoction, I have seen the slightest benefit derived from its internal use; but employed externally in the form of poultice, I consider it of great value. The poultice is prepared by carefully picking and washing about two large handfuls of the leaves, these are thrown into a pot containing about a quart of boiling water, and simmered by the side of a fire for twelve hours, adding fresh water if required. It is then beat into a pulp, and as much linseed meal stirred in as to bring it to the consistence of a poultice, which is spread on flannel and applied to the abdomen, and fastened with a pretty tight bandage,—or it may be applied to the legs if anasarca of the extremities alone exists.

I have always repeated the application of a fresh poultice every twelve hours till the water is drained off; or continued it for such a time, as to show that no benefit may be expected from it, which will be ascertained in two or three days. The poultice produces in general copious perspiration, and at the same time acts powerfully on the kidneys. In some constitutions it occasions feelings of great sinking and exhaustion, but I have never known it do harm. No medicines of any kind have been given whilst the poultice is applied, unless the sinking feeling above described is distressing, when I have found the *Spirit. Ether. Nitros.* in small doses, remove it; but its effects are increased by the patient's drinking plentifully of warm fluids; and I have always preferred weak beef-tea or chicken-broth, with the view of keeping up the strength, which is generally at a low ebb in such patients. Opiates of all kinds I have found hurtful; but I employ warm clothing, and keep the patient in bed during the whole period in which the poultice is applied. I may also add, that it appears most successful in cases where other remedies have been extensively employed and failed, probably from the kidneys having been long previously excited; and, judging by the state of the urine, when it is high-coloured, loaded, and depositing considerable sediment, which, on being exposed to heat, becomes clear; but I have also found it of service in cases where the urine coagulates from heat, and thus evidently showing disease in the structure of the kidneys. The following cases will show more decidedly its effects.

Case I.—E. T. about 44 years of age, of a scrofulous habit, has considerable swelling of the abdomen, with fluctuation; has extensive eruptions over the arms and body; is greatly emaciated; and complains much of griping pains; bowels costive; pulse small and quick. Some time ago was under the action of mercury, of which she had taken at different times large quantities; has since been freely purged; urine very scanty, coagulable by heat; has used the acetate of potass, and other diuretics, without benefit. On the 20th of September, a liverwort poultice was applied to the abdomen, which, during the course of the night, affected the kidneys. During the following nine days, seventy-four and a-half pounds of urine were discharged, being on an average of eight pounds daily. The poultice occasioning exhaustion, was then left off; but the urine becoming again small in quantity, it was resumed on the 24th of October, and continued till the 12th of November,—a period of eighteen days,—when 196 pounds were passed, being an average of eleven pounds a-day. The poultice was again discontinued, but resumed on the 23d November, and continued at intervals a month, during which period 256 pounds were discharged, being on an average of eight and a-half pounds *per diem*, when all dropsical symptoms ceased.

Case II.—J. A. is labouring under general dropsy; the abdomen, arms, legs, scrotum, and penis, being severely distended with fluid. There is disease of the heart and liver; pulse slow, irregular, and intermitting; face livid; breathing extremely difficult. Has been long under treatment; and has taken a great variety of diuretics and purgatives,—urine from three to four pounds. The *Marchantia* poultice was applied on the 3d August, from which period till the 21st,—being nineteen days,—250 pounds of urine were passed, being on an average of thirteen pounds a-day. At this period he was attacked with slight dysentery, from which he recovered, and the dropsical symptoms disappeared.

Case III.—J. S. aged 50, took ill several days ago with swelling of the abdomen and inferior extremities, having had a bowel complaint for some days previously. Tongue dry in the centre; much thirst; urine coagulates by heat; has no local affection; nor can he assign any cause for his complaint; has been in the habit of drinking much at times; addicted at times to the use of spirituous liquors; urine very scanty. After being freely purged, and receiving no relief from diuretics, the *Marchantia* poultice was applied; and from the 27th of September to 26th of October,—being a period of twenty-nine days,—309 pounds of urine were discharged, being on an average of ten and a-half pounds a day, when he was dismissed cured.

Case IV.—M. M. aged 30, of dissolute habits, and labouring under extensive organic visceral disease, became dropsical. Mercury, squills, digitalis, cream of tartar, and many other means, were tried without effect. She was completely relieved, however, of all dropsical symptoms, by the application of liverwort, about three years since, and is still living. In this case, the secretion of urine had twice entirely ceased for upwards of seventy hours, accompanied with stupor and difficulty of breathing, which were not relieved by large bleedings, purgatives, blisters, &c. but on both occasions, the secretion of urine was restored by the application of liverwort poultices to the abdomen. The urine was coagulable by heat.

Case V.—J. W. about 40 years of age, a labourer, after being exposed to cold, became dropsical. Repeated diuretics and purgatives failed in relieving him; but after a few applications of the

liverwort poultices, which occasioned violent perspiration, and considerable discharge of urine, he was permanently relieved.

Case VI.—A. C. about 50 years of age, a labourer, of good constitution, but addicted to the use of spirits, became dropsical, and on hearing of the cure performed on J. A. applied the liverwort, and was cured in ten days.

Having requested Dr Stephenson of the 13th Dragoons, to try its effects in India, the following cases were treated by that gentleman in that climate.

Case VII.—P. M. a soldier in the 2d battalion of the Royal Regiment of foot, was labouring under dropsy. The abdomen was much enlarged, as well as the lower extremities. His case was considered hopeless by the medical officers of his corps, who had employed the usual means of cure without success. The application of the liverwort was followed by copious urinary evacuations, and he gradually recovered, having afterwards done duty as a soldier. He has since returned with his regiment to this country.

Case VIII.—Serjeant P. of the same corps, of dissipated habits, and with liver affection, became dropsical. After the failure of other means, the liverwort produced marked benefit in his case, and on the regiment leaving India, he was so completely recovered as to remain in the country, having volunteered into another corps, and being received as fit for duty.

Many other cases of dropsy, illustrating the diuretic effects of the *Marchantia* poultice, I could have adduced; but have refrained from doing so, in order not to extend this notice beyond its due limits. It must be remembered, however, that the *Marchantia* is no more a specific than any other diuretic; but, as it has succeeded in many cases in which others have failed, I think it may be useful to practitioners to be acquainted with an agent, the mere external application of which is so effectual in exciting the action of the kidneys.

Art. VI.—*Abstract of the Returns of the Sick of the Troops belonging to the Presidency of Fort St George, (Madras,) for the year* 1827, 1828, 1829, *and* 1830. *To which are added some observations*, by Henry Marshall, Deputy-Inspector-General of Army Hospitals.

The following abstracts show the mean ratio of mortality among both the European and native troops, and the diseases which proved fatal. The other "general results" are of comparatively little importance. A few cases appear to have died of "ophthalmia," which is a rare occurrence. But perhaps this circumstance is to be attributed to the supervention of fatal diseases after the men had been admitted under the head of ophthalmia.

EUROPEAN TROOPS.

	Apoplexy.	Asthma.	Cholera.	Colic.	Diarrhœa.	Dropsy.	Dysentery.	Dysury.	Fever.				Hepatic Diseases.	Inflammation External.	Inflammation of viscera.			Insanity.	Ophthalmy.	Rheumatism.	Scrophula.	Syphilis, &c.	Tumours.	Ulcers.	Wounds and Accidents.	Other Complaints.	Total.
									Ephem.	Contin.	Intermit.	Remit.			Abdom.	Cephalic	Thoracic.										
1827.—Strength 11,712.																											
Remained Dec. 31, 1826	0	3	4	1	8	11	241	0	0	40	215	74	95	0	9	5	26	2	66	78	2	116	0	67	61	127	1,251
Admitted during 1827,	16	48	270	388	981	90	3632	16	0	1342	1973	2059	1687	394	281	161	484	32	1082	1078	26	1415	61	1620	1520	3414	24,070
Discharged,	4	42	163	377	930	79	3343	14	0	1296	2084	1994	1558	371	267	154	460	29	1026	1038	28	1416	48	1606	1509	3386	23,224
Died, -	12	5	110	3	25	15	329	1	0	28	28	75	87	0	11	5	26	1	0	17	0	4	1	4	4	45	836
1828.—Strength 12,171.																											
Remained Dec. 31, 1827	0	4	1	9	34	7	201	1	0	58	76	64	137	23	13	7	24	4	120	101	0	111	12	77	72	105	1,261
Admitted during 1828,	24	36	434	455	794	55	2908	13	0	1622	1560	1171	1640	978	245	147	513	13	1063	1220	22	1574	222	1136	1834	2819	22,504
Discharged, -	11	36	317	456	778	50	2791	14	0	1598	1558	1156	1583	940	230	143	496	14	1123	1238	18	1563	228	1146	1819	2774	22,080
Died, -	12	4	117	2	20	8	198	0	0	26	22	38	76	3	14	4	23	0	2	13	0	4	1	8	8	48	651
1829.—Strength 11,748.																											
Remained Dec. 31, 1828	1	0	1	6	35	4	117	1	0	54	56	40	114	59	14	6	16	3	71	69	3	116	7	60	77	93	1,023
Admitted during 1829,	18	13	231	287	823	61	2006	13	0	1458	1245	779	1347	1012	272	136	497	32	1313	1140	22	1345	210	910	1733	3031	19,964
Discharged, -	10	36	202	289	837	54	1901	14	0	1457	1257	781	1332	1023	269	137	473	27	1315	1128	24	1362	205	916	1731	2956	19,738
Died, -	9	7	30	1	6	8	141	0	0	17	12	20	61	3	6	2	17	3	1	9	0	7	0	1	6	46	413
1830.—Strength 11,650									*																		
Remained Dec. 31, 1829	0	0	0	3	15	3	81	0	0	38	32	18	70	46	11	3	23	5	68	72	1	92	12	51	73	119	836
Admitted during 1830,	21	46	290	237	628	40	1991	12	102	1558	1007	652	1251	772	362	144	411	28	1106	972	12	1231	197	861	1586	2658	18,175
Discharged, -	14	41	245	234	609	36	1855	11	100	1539	987	631	1173	784	347	138	385	25	1119	972	10	1244	199	870	1567	2608	17,743
Died, -	6	1	44	1	12	5	117	0	10	11	10	13	58	6	8	3	20	1	0	7	0	0	0	1	4	45	374
Remaining Dec 31, 1830	1	4	1	5	22	3	100	1	2	46	42	26	89	28	18	6	29	7	55	65	5	86	7	41	90	117	894

* Distinguished only since the middle of 1830.

GENERAL RESULTS.

	1827. Per cent.	1828. Per cent.	1829. Per cent.	1830. Per cent.
Proportion of admissions to numerical strength,	205.515	184.898	169.935	186.008
Prop. of deaths to do. do. .	7.137	5.348	3.515	3.210
Prop. of do. do. do. exclud. deaths from cholera,	6.198	4.387	3.200	2.832
Prop. of do to the total sick treated, . .	3.301	2.739	1.967	1.967
Prop. of do. do. do. excluding cholera, .	2.898	2.288	1.845	1.762

NATIVE TROOPS.

	Apoplexy.	Asthma.	Cholera.	Colic.	Diarrhœa.	Dropsy.	Dysentery.	Dysury.	Fever.				Hepatic Dis.	Inflam. Exter.	Inflam. of Viscera.			Insanity.	Ophthalmy.	Rheumatism.	Scrophula.	Syphilis, &c.	Tumours.	Ulcers.	Wounds & Ac.	Other Compts.	Total.
									Ephem.	Contin.	Intermit.	Remit.			Abdom.	Cephalic.	Thoracic.										
1827,—Strength 84,128.																											
Remained Dec. 31 1826,	0	13	6	9	22	31	51	1	0	34	857	68	5	59	3	0	10	7	25	402	15	302	6	851	124	658	3,560
Admitted during 1827,	21	115	560	320	982	250	815	17	0	1102	12501	2119	78	2187	52	51	177	76	603	5070	108	3205	543	7629	2965	11664	53,221
Discharged, -	6	106	270	312	913	106	755	16	0	1095	12919	2020	70	2131	47	47	139	72	591	4910	89	3181	491	7684	2923	11690	52,679
Died, - -	12	13	283	16	63	68	76	0	0	19	142	115	11	22	6	3	34	2	2	64	5	19	2	154	12	220	1,362
1828.—Strength 76,224.																											
Remained Dec. 31 1827,	3	14	9	7	29	16	37	2	0	19	293	54	3	96	2	1	13	8	35	493	29	308	48	645	154	402	2,720
Admitted during 1828,	22	154	819	310	1105	201	640	30	0	788	10522	1396	53	2769	58	66	148	70	583	4303	95	2421	803	3954	3013	6516	40,848
Discharged, -	10	143	444	309	1648	139	595	31	0	767	10441	1335	47	2758	43	66	112	69	589	4305	103	2497	806	4336	3020	6466	40,477
Died, - -	16	17	368	5	67	63	58	1	0	28	98	65	7	11	6	3	20	5	1	64	4	11	4	28	16	153	1,129
1829.—Strength 71,945.																											
Remained Dec. 31 1828.	0	8	16	3	38	15	29	0	0	11	272	48	2	104	9	2	19	4	35	420	17	208	41	232	121	280	1,934
Admitted during 1829,	20	126	501	273	953	167	496	19	0	379	7488	859	51	2787	45	30	78	70	662	3809	64	1767	688	2608	2911	6101	32,982
Discharged, -	7	108	290	270	941	103	473	16	0	370	7416	849	45	2773	45	30	72	59	665	3869	68	1810	683	2641	2895	5782	32,286
Died, - -	13	17	213	2	61	62	33	0	0	13	108	43	3	7	7	3	21	1	1	51	1	15	4	9	11	142	841
1830.—Strength 67,106																											
Remained Dec. 31 1829,	0	9	8	4	19	18	19	3	0	7	230	15	4	122	2	0	4	14	31	309	12	152	38	190	127	446	1,780
Admitted during 1830,	13	158	262	293	791	96	328	15	563	356	5925	693	51	3060	37	46	94	101	639	3205	62	1275	509	2291	2958	6922	30,745
Discharged, -	2	141	141	296	746	76	305	12	528	341	5936	662	44	3035	30	45	54	101	638	3206	64	1315	522	2354	2956	6933	30,470
Died, - -	11	10	120	7	47	38	31	3	2	13	78	21	6	12	8	0	37	3	1	55	4	10	4	12	13	149	709
Remaining Dec. 31 1830.	0	10	3	1	17	4	11	3	3	11	147	25	3	134	1	1	7	11	31	253	6	102	21	115	118	287	1,355

' Distinguished only since the middle of 1830.

GENERAL RESULTS

	1827. Per cent.	1828. Per cent.	1829. Per cent.	1830. Per cent.
Prop. of admissions to numerical strength, . .	63.261	53.589	45.843	45.815
Prop. of deaths to do. do. . . .	1.618	1.481	1.168	1.056
Prop. of do. do. do. excluding deaths from Cholera,	1.282	0.998	0.872	0.868
Prop. of do. to the total sick treated, . .	2.398	2.591	2.408	2.179
Prop. of do. do. do. excluding Cholera,	1.919	1·780	.825	1.806

H. S. FLEMING, *Sec. Med. Board.*

To give the returns of the sick of an army all the accuracy and precision of which they are capable, the denomination of the diseases of patients ought to be changed accordingly as the symptoms may warrant. Men who are admitted into hospital on account of ulcers on the legs may be attacked with dysentery; consequently, cases of this kind should be discharged, and re-admitted under the head of the more important disease.

The above returns are defective in so far as they do not show the mean ratio of sick per cent. in hospital, nor the mean annual ratio of men who have been discharged on account of disabilities, in other words, "invalided." In military returns there are three important objects which deserve much consideration in a political point of view.

1. The mean ratio of sick.
2. The mean annual ratio of deaths.
3. The mean annual ratio of men who have been discharged on account of disabilities.

A knowledge of the mean ratio of sick is required to enable general officers to estimate what proportion of dutymen may be depended upon in an army; as also the extent of hospital accommodation that may be necessary, &c. &c. In Great Britain, the mean ratio of sick among the troops is about from four to five per cent. Through the kindness and liberality of Dr Renny, Director-General of Army Hospitals in Ireland, I was furnished with abstracts of the returns of the sick in Ireland for a term extending to thirty-two years. and during this period the mean proportion of sick was 5.1 per cent. This conclusion is founded on a broad basis, in as much as the mean strength of the troops in Ireland during the above period amounted to 36,921. My estimate of the mean ratio of sick in this country is supported by official returns at the adjutant-general's office; as it appears that in twenty-four monthly musters of different corps, forming an aggregate of 313,695, 4.4 per cent. were on the sick list. What is the ordinary mean ratio per cent. of men disqualified for duty among the "European troops," and the "Native troops," of the Madras army?

The importance of each of the other two points, namely, the amount of the mean decrement of corps by death and by disabilities, is universally admitted; as a knowledge of these facts is necessary to regulate the recruiting of an army, &c. &c.

The above returns afford materials for deducing the relative mortality by particular diseases in both classes of troops in different years. For example, it appears that the ratio of deaths by cholera to the number treated were for the four years included in the returns as under.

	Europeans.	Natives.
1827,	40 per cent.	49.8
1828,	24.6	43.9
1829,	12.9	41
1830,	19.2	46.6
Mean of four years,	23.	45.3

Similar conclusions may be made in other diseases. The original returns would have been greatly improved had the relative mortality by each disease been stated.

The following table shows the mean strength of the Madras army, the number of deaths, and the proportion of deaths per cent. to the average strength during each of four years.

EUROPEAN TROOPS.

	Mean strength.	Died.	Ratio of deaths per cent.
1827,	11,712	836	7.1
1828,	12,171	651	5.3
1829,	11,748	413	3.5
1830,	11,650	374	3.2
Mean of four years,	11,820	568	4.8

NATIVE TROOPS.

1827,	84,128	1362	1.6
1828,	76,224	1129	1.4
1829,	71,945	841	1.1
1830,	67,106	709	1.
Mean of four years,	69,850	1008	1.4

By this table, it appears that the average annual mortality of the European troops was 4.8 per cent.—a ratio which indicates a very extraordinary degree of health. The mean annual loss of the British army on foreign service, amounts to about 5.6 per cent. This statement includes, however, the comparatively healthy garrisons and colonies of Gibraltar, Canada, Ionian Islands, &c. I should think that European troops in India seldom lose less than 7 per cent. by death. The exact amount, however, can be correctly ascertained only by a very extensive suite of returns.

The mean annual ratio of mortality among the native troops is 1.4 per cent., the British army in Great Britain loses about 1.5, so that the proportion of deaths is nearly the same. There is one foreign station where the proportion of mortality among the troops is less than in Great Britain, namely, Bermuda, as will appear by the following statement.

Return of the mean strength of the troops at Bermuda for a period of five years, or from 1825 to 1829, inclusive, &c. &c.

Mean strength, 650; mean annual number invalided, 24; ratio of men discharged per cent. of the strength, 3.7; mean annual number of deaths, 5; ratio of deaths per cent. per annum, .7, or one in 130 of the whole strength.

The following tables are intended to show the ratio of mortality by each disease in proportion to the whole amount of deaths. I have combined under one head "diarrhœa" and "dysentery," and classed the four different varieties of fever together.

Table No. 1.
European Troops.

	Died.	Ratio per cent.
Dysentery & diar.	848	37.3
Cholera,	301	13.2
Fever,	300	13.4
Hepatic diseases,	283	12.4
Thoracic inflam.	86	3.7
Rheumatism,	46	2
Apoplexy,	39	1.7
Inflam. abdominal,	39	1.7
Dropsy,	37	1.6
Wounds & accid.	22	4.5
Asthma,	17	
Syphilis,	15	
Inflam. cephalic,	14	
Ulcers,	14	
Inflam. external,	12	
Colic,	7	
Insanity.	5	
Ophthalmia,	3	
Tumours,	2	
Dysury,	1	
Other diseases,	154	8.1
Loss,		4
	2274	100

Table No. 2.
Native Troops.

	Died.	Ratio per cent.
Cholera,	990	24.5
Fever,	745	18.5
Dysentery & diar.	436	10.8
Rheumatism,	239	5.9
Dropsy,	232	5.8
Ulcers,	203	5.
Thoracic inflam.	121	3.
Asthma,	63	1.5
Syphilis,	55	1.3
Inflam. external,	53	1.2
Wounds & accid.	52	1.2
Apoplexy,	51	1.2
Inflam. abdominal,	29	3.4
Hepatic diseases,	29	
Colic,	23	
Scrofula,	14	
Tumours,	14	
Insanity,	11	
Inflam. cephalic,	8	
Ophthalmia,	5	
Dysury,	4	
Other diseases,	654	16.2
Loss,		5
	4032	100

According to table No. 1, it appears that 37.3 per cent. of the deaths among the European troops occurred in consequence of bowel complaint. It is not unlikely that a considerable number of the fatal cases returned under the heads "fever" and "hepatic diseases," fell victims to the same disease. There is much probability, that, on an average, from 45 to 50 per cent. of the deaths which occur in India among European troops is occasioned by intestinal disease. The indiscriminate item "other diseases," contains so large a portion of the whole deaths, (8.1 per cent.) that it is impossible to appreciate with accuracy what share each disease had in occasioning the total mortality.

Table No. 2, shows that a larger proportion of the mortality which occurred among the native troops was occasioned by fever, than among the Europeans. About 6 per cent. of the mortality among the natives is attributed to "rheumatism," which appears to be a large proportion by that disease. The ratio of fatal cases by thoracic disease in both classes of troops appears to be remarkably small, when compared with similar returns of troops in this country. It is to be regretted that the indiscriminate item "other diseases" is so excessively large, (16.2 per cent.) as to affect the accuracy of any conclusions which may be made in regard to the specified diseases. The returns of hospitals should almost always contain a column under the head "anomalous diseases," and perhaps another under the head "feigned diseases." Many a man is admitted into hospital, of whose alleged disease it is for some time difficult to give a specific name, and others are occasionally admitted in consequence of factitious or feigned disabilities. When obscure diseases are precipitately classed, they may receive a wrong denomination, and, if feigned disabilities be arranged under the head of a real disease, the numbers of that disease are unduly increased. In these and other respects, the annual reports of the Glasgow Royal Infirmary are worthy of imitation.

In addition to the above general abstract of the returns of the sick of the troops belonging to the Presidency of Fort St George, the Madras Medical Board has lately printed two volumes of reports. The first volume is entitled "A Series of Tables, the results of disease in the different European Regiments serving under the Madras Presidency, and in the Garrison Hospital of Madras and Poonamallee, from the commencement of the year 1820 to the end of the year 1826, with observations on the practice employed in Fever, Hepatitis, and Dysentery, extracted from the half-yearly Reports of the Medical officers in charge during the period embraced by these tables respectively. The whole arranged for publication by the Medical Board, and published under the Authority of Government. Madras, 1828."

The second volume is entitled "Medical Reports, containing Observations on Cholera, Dysentery, the effects of Sulphate of Quinine as a remedy of Fever and of inflammation of Veins, with Cases of these diseases, and notices relative to the Treatment of Syphilis without Mercury, and the utility of an Indian remedy in Ophthalmia; selected by the Medical Board from the Records of their Officers, and published under the Sanction of Government. Madras, 1831."

These volumes contain many interesting facts and observations, and the Medical Board of Madras deserve the sincere thanks of the medical profession for giving them publicity.

ART. VII.—*On the Epidemic Scarlatina and Dropsical Affection which prevailed in Edinburgh during the Autumn of* 1832. By Mr G. HAMILTON, Extraordinary Member, and lately President of the Edinburgh Hunterian Medical Society.

THE observations contained in the following paper were originally made for the purpose of being laid before the Hunterian Medical Society; but several professional gentlemen of eminence having thought some of them worthy of a more extended circulation, I have been induced to bring the whole before the public.

The opportunities I have had of seeing the different forms of the disease have been principally in the three Royal Dispensary districts south of the High Street and Canongate, under the care of Mr Messer, and Drs Poole and Warden, who have kindly allowed me to illustrate my observations with a few of the many interesting cases that occurred.

As nearly as I can calculate, during the autumn months, I have attended from 150 to 160 patients labouring under this affection. The first cases which I saw were in the district in the immediate neighbourhood of the Dispensary, about the end of July or the beginning of August; and for some time previous to this period, so little had this complaint been prevalent, that although, for two and a-half years past, I had seen, in the districts to which I was attached, a great variety of disease, only two or three cases of scarlatina, and those of a very mild character, had come under my observation.

Some interval occurred between the appearance of the first cases and the proper commencement of the epidemic. During the months of September and October it was most prevalent, as well as most severe, but since about the middle of November I have seen almost no cases in the districts alluded to, although I understand that, up to the end of November, it has prevailed to a considerable extent in other quarters of the city. The part of the town in which I have seen most of the disease, has been in the Pleasance and streets immediately adjacent, and in the Cowgate. In the rest of the town, west of the Pleasance, I have been called to comparatively few cases. The weather, during the period alluded to, has been generally much colder than usually happens at the same season of the year; and I have noticed in the ordinary patients attending the Dispensary, more especially during October, that chest affections, both in children and in adults, have been uncommonly frequent. This, perhaps, may, to a certain extent, account for some of the chest complications, which, it will appear, have been so numerous in this epidemic. Upon examining the entries in the books of the Royal Dispensary of the patients who have attended for advice during the time the epidemic has prevailed, I find that there have been about one-half more cases of *cynanche tonsillaris*, than during a corresponding period last year. I have also been informed by a friend, that, in some parts of the country round Edinburgh, sore throat, with the formation of abscesses externally, and violent fever, has prevailed epidemically among horses; and, on mentioning this lately to Mr Dick, Veterinary Surgeon, he stated to me, that, in a good many cases, this had been attended with a particular eruption which he had long been in the habit of pointing out to his students as analogous to the scarlatina of the human subject.

Although individuals are in general affected with this complaint only once during their lifetime, I have noticed a number of cases in which adults, previously affected, while sleeping in the same bed with children who were labouring under the primary fever, had a slight febrile attack, with sore throat. These symptoms have always disappeared in a few days. I have seen, however, in adults, who had not previously been attacked by this disease, one or two cases of sloughing sore throat without any eruption, apparently from communication with children affected. In one case I observed a second distinct attack of the primary fever. It was as follows:—A girl (Watt) in Arthur Street, was seized with the fever. The eruption came out well, and continued out about the usual time; but, when she was getting better, a febrile state and symptoms of dropsy began to appear. While this girl laboured under the dropsy, a brother, who had been living at some miles distance, was brought home also affected with the primary fever. They both slept in the same bed, and about three weeks after the eruption had disappeared from the girl, she had a distinct aggravation of febrile symptoms, with a second well-marked eruption.

In the course of the epidemic, I have seen one or two cases, where the eruption has been so prominent, as to make me doubt whether they were attacks of true scarlatina. These were attended by sore throat, however, and also occurred in neighbourhoods where scarlatina was very prevalent.

Authors have divided, and, as it appears to me, very justly, this disease into three principal varieties; viz.—the *scarlatina simplex*, *anginosa*, and *maligna*; although it must be confessed, that it is not always easy to say to what class a particular affection belongs, and although we see in families daily examples of each of these varieties propagating the others.

The *scarlatina simplex* is a mild affection, or perhaps it would be more proper to say, that we refer the mild affections in this disease, to the head of *scarlatina simplex*. It in general is attended with inflammation of the fauces, and when I have examined with care, I have in most cases discovered, during its course, clean, not large excavated ulcers—in this respect materially differing from those in the *anginosa*, in which the ulcers are almost invariably covered with a quantity of mucus, or with large sloughs or white lymph. This variety usually requires little medical aid; in truth, it occurs in numerous cases where the parents, and even the children themselves, are apparently unaware of its existence. When called to this description of cases, I have been in the habit of ordering the warm bath, along with a gentle purgative and some mild diaphoretic. I have made it an invariable rule, immediately upon being called to a case, however apparently mild, to examine the throat, and I have repeatedly found, even although the patient had made no complaint of pain, that there were considerable ulcers on the tonsils. If seen in a sufficiently early stage, these have the appearance of small *aphthæ*, but assume the form of ulcers with wonderful rapidity. In twenty-four or thirty-six hours, I have often seen *aphthæ* become large excavated ulcers.

In both these stages, where the surrounding inflammation has not been great, the application of the nitrate of silver almost never fails to heal them up in one or two days. It is not always easy in children, however, to learn in what state the throat is; and, in consequence, I have seen some melancholy examples of practitioners having allowed most extensive sloughing and ulceration to go on, without having properly ascertained the state of the throat, and without having applied for these almost any remedies. The most convenient method of examining the throat I have found to be pushing the first or second finger of the left hand towards the root of the tongue, holding at the same time the lower jaw steady with the thumb under the chin. By this means, the finger being thrust sufficiently forwards, an attempt at vomiting is produced, and the mouth is instinctively opened as well as the tongue lowered. Where the child is so young as to have got but few teeth it is quite easy to do this, but, when older, I have generally, to prevent being bitten, caused some person to insert the handle of a knife, or something of that description, between the molar teeth.

The *scarlatina anginosa* is a much more severe affection than the *simplex*. It is distinguished more particularly by the violent febrile symptoms, the red elongated *papillæ* of the tongue, and the sloughing sore throat with great surrounding inflammation. From extensive examination, I can have no doubt, that sloughing and ulceration have been the most common attendants upon this variety. In one case which I examined, however, instead of ulcers, we found a considerable quantity of lymph deposited on the inflamed mucous membrane. In another example, the ulcers of the tonsils were so deep, that I could introduce into them my little finger for nearly three-fourths of an inch, and in the same case, the uvula was nearly half as long again as natural, and almost as hard as a piece of cartilage. The inflammation in any of the fatal cases I have seen has been by no means limited to the tonsils. On the contrary, I recollect only one fatal case of *scarlatina anginosa*, in which it was not evident, both from the appearances after death, and from the symptoms during life, that violent inflammation had extended to the epiglottis, glottis, trachea, and lungs. This, indeed, I may say, has constituted the chief danger of the primary attack in the present epidemic. For during a considerable part of it, almost every severe case I saw had more or less of the chest affection. Whenever the bronchitis has gone on for any length of time unsubdued, or rather when it has not been checked at the very commencement, the obstinacy of the symptoms has been almost insurmountable. I have generally found the bronchia and trachea filled with a darkish muco-purulent fluid, and, occasionally parts of the lungs in either the first or second stage of hepatization. It has not in any case happened, that the disease has had time to pass on to the third or grey state of hepatization, although on a superficial examination a person might be inclined to think so. On carefully attending to it, we see, when a section of the lung is pressed, that the pus does not ooze from every part of the surface, but comes from the insulated bronchia, and then diffuses itself over the surrounding parts. In one case, I have seen the inflammation apparently extend from the bronchia to the parenchyma of the lung, and from this to the pleuræ, which were glued together from the effusion of a quantity of coagulable lymph. It does not seem to me improbable, that there is in this affection a peculiar tendency in the mucous membrane of the lungs to become affected, and possibly this might have occurred even if the inflamed throat had been absent. If this be not so, I do not see how we can easily explain why, in common severe cases of *cynanche tonsillaris*, the spreading of the inflammation to the lungs happens so seldom, and more particularly, why an appearance, which I had an opportunity of noticing in many cases, should have been present, viz. that the inflammation stopped abruptly at the top of the œsophagus. This appearance, if it be constant, would, I should think, rather militate against the following opinion expressed by Dr Bateman. "In a few instances," he says, "the patients have suddenly sunk as early as the second, third, or fourth day, probably from the occurrence of gangrene in the fauces, œsophagus, or other portions of the alimentary canal." In the cases I have attended I have seen no reason to suppose, either from the symptoms or *post mortem* appearances, that death has ever taken place from any of these causes.

It may be said that the three principal affections of the respiratory organs which occur here, viz. croup, bronchitis, and pneumonia, are characterized by tolerably distinct symptoms; the croup by the stridulous breathing, the bronchitis by the mucous rattle, and the pneumonia by the heaving and rapid respiration in the first place, and the greater or less want of motion in one or both sides of the chest afterwards. I have been able, I think, from these alone, in young patients especially, to predicate with tolerable accuracy what would be found on *post mortem* examination.

Although there have been several cases in which these local affections have been combined in a greater or less degree, I have seen only one with decided symptoms of croup from the scarlatina sore throat.

In this case I procured an examination. There were in the fauces two not very large ulcers; but, with the exception of a portion of the lung not larger than a shilling, neither in the epiglottis nor in any part of the larynx or lungs were there any decided marks of inflammation.

The kind of *scarlatina anginosa* which has appeared to me the most formidable is that in which the affections of the throat and chest are severe, at the same time that the fever just verges upon the malignant variety. In these cases the practitioner may be said to be placed in a dilemma. If he uses active antiphlogistics to subdue the local disease, the eruption will frequently disappear, and the powers will probably sink under the combined influence of the two affections. If, on the other hand, he give even gentle stimulants to enable the system to rally, apprehensions may be entertained that the local disease will be aggravated. I have tried both methods of cure, and I am inclined certainly, upon the whole, as the lesser of two evils, to adopt the stimulating treatment, combined with very gentle local bleedings, and counter-irritants. Opium, with a small quantity of calomel, has seemed to me, in these cases, to be a remedy of considerable importance; and I think we may exhibit it here with the same hopes of success, to a certain extent, as in dysentery, enteritis, or puerperal fever. In dysentery, more particularly, the analogy seems to me more close than might at first sight be thought. How does the exhibition of opium produce relief in inflammation of the mucous membrane of the intestines? Not certainly altogether by its mere local application to the parts inflamed; for how could we on this supposition account for the relief given by the use of the suppository? and in its action in peritonitis or enteritis it is quite clear that the opium must operate through the general system. In bronchitis, also, it appears to me an error to suppose, that the exhibition of moderate doses of opium will prevent expectoration; for I think we are by no means warranted in asserting, that its beneficial effects are produced merely by blunting the general sensibility. Where inflammation exists, indeed, this medicine seems in many cases to possess the peculiar quality of exhausting its powers in overcoming the diseased action; and upon this principle, I apprehend, is to be explained the success of Dr Armstrong's practice in peritonitis,—in which affection, of late years, it has been not uncommon for practitioners to give twenty-four grains of opium in as many hours, without the head being in the slightest degree affected. * In many other affections the same is the case. I have frequently given in rheumatism and pleuritis from eight to twelve grains in the twenty-four hours, without any narcotic effect being produced. At all events, whatever may be the explanation of its operation, its use, even in considerable quantity, has appeared to me to be in no case attended with bad effects, and in several, to have had a very beneficial influence. In illustration of these, as well as of other points, I shall relate a few particulars of two cases.

A young man named Eckford, in Riego Street, 18 years old, began complaining on a Wednesday evening of lassitude, pain of the head, and the other precursors of fever. As there had been several children ill of scarlet fever in the same house, his friends sent to me on Thursday, to request that I would call immediately and see him. I called upon Thursday evening; that is, within eighteen or twenty hours after the first symptoms commenced, and found the young man with the tongue dry, the pulse soft and very frequent, the skin hot, and altogether having the appearance of a patient in an advanced stage of continued fever. I examined the skin to see if there was any eruption; but only the slightest possible blush on the surface could be discerned. In the course of some hours afterwards, however, it came out more fully. As the patient had been previously strong and healthy, I resolved to try the effects of a small general bleeding. I accordingly abstracted about eight ounces of blood; and while it was flowing, I was rather surprised to notice that, contrary to what we generally find in the commencement of severe fevers, the colour of it was a bright scarlet. Upon examining the throat, I found it much inflamed, but not ulcerated. For this I ordered, after the lapse of some hours, the application of ten leeches. I also directed that he should be immersed in a warm-bath for ten minutes, and that he should have some purgative medicine, and an astringent gargle. Next evening I repeated my visit, and I found that he had been slightly delirious during the night, and as he had complained much of the throat, five or six more leeches had been applied that morn-

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* See Drs Graves and Stokes' Clinical Cases in Vol. v. of Dub. Hosp. Reports.

ing. His friends, who appeared very attentive to him, stated that they had raised him out of bed about a quarter of an hour before I called, at which time he was quite sensible. When I saw him, however, he appeared comatose; his breathing was stertorous; there was a loud mucous rattle; and a quantity of dark frothy mucus was coming from his mouth. His pulse being quick and feeble, stimulants were ordered. These were given in good quantity. In a short time after I left him, I was told he again became sensible, and continued so till five o'clock next morning, when he died. On examination, the brain was found nearly natural, with the exception of a very slight effusion under the arachnoid. There were two not very large ulcers on the tonsils. The mucous membrane of the trachea, and especially of the *bronchia*, was much inflamed, and covered with a reddish bloody mucus. From there having been some vomiting, the stomach was examined, in one part of which was found a reddish patch, apparently the result of inflammation.

The other case with which I would contrast this was that of a boy of 11 years of age. I did not see him until about four days after the bronchial affection had begun. The eruption could be perceived, but apparently had never come very well out; but his tongue and throat presented the distinct appearance peculiar to *scarlatina anginosa*. The pulse was quick and feeble, the skin was hot, the breathing was very greatly obstructed by accumulations in the *bronchia*, causing a loud mucous rattle, and the delirium was so great that it was with difficulty he could be kept in bed. The first thing I did was to examine the throat, and, as the surrounding inflammation was not great, to touch two large ulcers with the nitrate of silver. I then ordered him to be placed in a bath, as warm as he could bear it, up to the neck, and to be kept there for ten minutes; to have a purgative enema, and to take a pill composed of half a grain of opium and two grains of calomel every fifth or sixth hour. Besides this I directed his friends to let him have some toddy, as they could not procure wine, at short intervals, and to apply warm cloths to the legs as high as the knees as counter-irritants, and also to apply a blister to the chest. Next day I found what I had directed had been only partially attended to. The boy had been placed in the bath; the blister had not risen very well, as he had been restless; he had got the enema, which had operated, but had taken only a small quantity of the toddy, and only one of the pills. The breathing, however, was somewhat easier; the skin and pulse, as well as the delirium, were nearly in the same state as before. Before I left the house I gave him myself nearly a wine glassful of toddy, and left strict injunctions that this and the pills should be continued regularly, and the warm bath repeated. The day following, when I called, I found that he had been put into the warm bath; that the toddy had been given repeatedly; and that he had taken five of the half grain opium pills. The change which had occurred was most remarkable. The breathing was nearly as easy as natural; the pulse was better as to strength; and for about twelve hours before I saw him the delirium had almost entirely ceased. This patient never had another bad symptom. The delirium which was present in both of these cases, and more particularly in the latter, might be conceived by some to furnish a contra-indication to the exhibition of stimuli or opium. Upon this, however, it will be better perhaps that I should reserve what I have to say until I speak of the head affection in the *scarlatina maligna.*

The remedial measures employed in the last of these two cases, modified according to the severity of the case and its complications, may be taken as a summary of the plan of treatment I should at present be inclined to adopt in this variety of scarlatina. Wherever the strength of the system admitted, I have been anxious to reduce the inflammation of the throat by the application of leeches and blisters before I touched the ulcers with the nitrate of silver. Sometimes the inflammation is not so great as to require previous bleeding; but although I have not myself used it, I conceive it is not by any means certain, that, even when the inflammation is considerable, the use of the nitrate of silver would not be beneficial. The profession has within these few years been made aware of the success which has attended the application of a concentrated solution of this substance in gonorrhœal ophthalmia; and in principle I do not see, even while the surrounding inflammation is unsubdued, any very great difference between the application of this substance to ulcers of the throat, and the use of it in the erythema of erysipelas, &c. In regard to gargles generally I may make two remarks. In the *first* place, in the great majority of cases, from this disease occurring in young children, they are altogether inapplicable; and *secondly,* even where they can be used, I doubt very much whether they in general get so far back as to benefit the ulcers in the fauces. The first of these remarks also applies to the inhalation of the steam of warm water, which, in the case of adults, I have often found very useful.

As to the use of the cold douche, which was so highly lauded by the ingenious Dr Currie of Liverpool, it seems now to be generally granted that it is applicable only in the milder varieties. Where the case is severe, I am certainly inclined to think that the warm bath is preferable. Whenever the heat, however, has risen high, sponging the surface, I have no doubt, may be serviceable. How far the bronchial complications might render its employment unadvisable, my experience does not enable me to say; but my impression is, that, in acute complications, or in acute symptomatic affections, most of our best authorities discountenance it.

A troublesome sequela of the sore throat in this epidemic has been the swelling and suppuration of the glands of the neck. These have been more particularly severe where the febrile symptoms and dropsy, to which I shall presently allude, have co-existed with these. In one instance, indeed, I have every reason to think that the extensive irritation and suppuration produced by these contributed materially to hasten the child's death. I did not see this patient until a considerable time after the commencement of the fever. Upon examining the throat it was found to be in a state of extensive ulceration, which, however, rapidly yielded to the usual applications. During the time this was healing, the anterior part of the neck, literally from ear to ear, swelled enormously. For this leeches and fomentations were assiduously employed, but without preventing the formation of large collections of matter, to give exit to which I required to make three incisions, one on each side of the neck, and another under the chin. Considerable fever and aggravation of the dropsical symptoms now began also to appear, and there was a great discharge from the neck of fœtid purulent matter. A variety of means was tried without avail. The whole of the integuments on the anterior part of the neck, and even behind one ear, became undermined, and ultimately sloughed,—alarming hemorrhage occurred, which, however, was restrained by compresses; and this patient, a girl about twelve years old, eventually sunk, after having been about five or six weeks ill, under an attack of diarrhœa and peritonitis. A quantity of purulent fluid was found in the abdomen, and other important alterations, to which I shall immediately have occasion to refer, were observed.

I have seen several other cases of a nearly similar character, although not quite so rapid in their progress. Where there has been a tendency of the integuments to undermine and slough, which I have observed more or less in almost every instance, I have, since this case occurred, at once laid the whole open; and after poulticing for a day or so, in the same manner as to the ulcers of the throat, I have applied the nitrate of silver for a few times every alternate day, poulticing during the meantime, and I have then ordered some stimulating lotion. In this way I have seen extensive and deep undermining ulcers behind the jaw and on the neck, which had been going on from bad to worse for several weeks, immediately assume a healthy aspect, and in the course of a week or ten days heal up altogether.

From this tendency of the integuments to become undermined, leech-bites have sometimes proved rather troublesome. I have not myself seen any cases which required particular attention; but my friend, Mr Gibson, Leith Walk, who has treated a great number of cases during this epidemic, and who coincides in opinion with me as to the fatality which has attended the antiphlogistic treatment in severe cases, has informed me, that in his practice the sloughing of the integuments from leech-bites has been occasionally very extensive.

A number of cases, where the inflammation had apparently spread from the Eustachian tube to the ear, have also occurred, but the affection has in general been slight. I have, however, been favoured by Mr Messer, of whose dispensary district I have charge, with the particulars of a case apparently of this description, where the symptoms have been more urgent. A boy, 8 years old, had scarlet fever with sore throat, and was recovering, when discharge from the external ear commenced, which lasted for three or four days. During the continuance of the discharge he complained of occasional pain of the head, and about five days posterior to the commencement of the discharge he was seized with convulsions. The employment of active antiphlogistics had the effect of removing these, but next day they returned with increased violence, and he lay in a state of stupor for twenty-four hours. Similar means were again employed, and the boy slowly recovered.

The other variety of scarlatina which has occurred to me during this epidemic has been of the malignant description. Of this I have seen a considerable number, and some of them of a very severe nature. The limits of this paper will not allow me to enter into minute details; but I may state, that in these cases it has seemed to me that the chief danger arose from the head affection. Unless the most active means were employed, the patient, who might previously be delirious, sunk into a state of profound coma, and in the course of a few hours died. I have said that to prevent this termination very active means must be employed; but what these ought to be, forms a most interesting subject of inquiry. For a considerable time, I must confess, I was strongly inclined to believe, that both in this variety and in the anginose, the delirium which occurs alone, or which precedes the coma, indicated the existence of some inflammatory action; and, acting under this belief, whenever the patient could bear it, I invariably ordered either leeches or cold applications to the head, and a blister to the back of the neck. But subsequent reflection and experience, as well as the fatality which attended this treatment, and the evidence of a considerable number of dissections, have led me to entertain considerable doubts of the correctness of this opinion.

In the *first* place, I apprehend it is not at all necessary to suppose that either delirium or coma necessarily indicates inflammatory action or effusion within the cranium. As evidence of this, we have only to refer to cases of concussion, where the individual dies of profound coma, and no lesion of the brain can be discovered,—to cases of apoplexy where the same is the case—or to those of *delirium tremens*, in which not only no inflammation or effusion adequate to account for death can be found, but where precisely the opposite of an antiphlogistic treatment is the only successful one. Is not delirium, indeed, in many cases, the accompaniment of decreased rather than of increased arterial action? In the last stages of typhoid fever, how commonly does it occur? and are not weak patients, from the mere circumstance of sitting up in bed, liable to bring on this symptom? What, in fact, I would ask, is profound sleep itself but a mild species of coma? and what evidence have we that in such a case, or in similar cases, antiphlogistics are indicated?

In the *second* place, the brain in the present instance appears to be affected in an analogous manner; for, upon the most attentive examination, with the exception of a slight dryness on its surface, no morbid appearances could be detected. In all the cases, however, which have terminated in coma, and which I have had an opportunity of examining, this dry appearance has been uniformly present.

In the *third* place, whatever analogy may be thought to exist between these different affections, the almost uniform want of success which attended the antiphlogistic treatment I at first adopted, and the advantage which appeared to me to arise in the case which I have already related, and in some others, from the exhibition of stimuli, certainly cause me to have serious doubts whether a portion of wine or other stimulant ought not to be allowed during the existence of both the delirium and the coma. As this is an important point, perhaps I may be allowed to mention another case or two. Upon accidentally calling at a friend's house one evening, I was requested to see a child, who, I was told, was labouring under an attack of scarlet fever. The child, I was informed, had been quite collected not long before, but, when I saw him, his pulse was quick and very soft, and he appeared to every one present to be fast verging towards a state of insensibility. I ordered the child to be immersed in a warm bath instantly, and also to have small quantities of wine at short intervals. This was done, and when I called again, in the course of two hours, a considerable alteration had taken place. When roused, the child sat up in bed, called for a drink, and talked quite sensibly. After this, by the continued use of gentle stimulants and other means, a rapid recovery took place. In another very severe case, a boy about 11 years old, small quantities of stimulants, with, occasionally, half grain doses of opium, seemed to me to have a marked effect in moderating all the symptoms, and particularly the delirium. I saw this patient early in the disease, but even then the delirium principally attracted the attention of his friends. Along with some wine I ordered the warm bath and half a grain of opium combined with two grains of calomel. The delirium continued violent for some hours afterwards, but then moderated; and next day when I called, I found his skin moist, and all the unfavourable symptoms much abated. I was told he had spoken almost no nonsense for ten or twelve hours. I ordered the wine to be continued, and the opium to be repeated. As the boy, however, had resisted, the pill had not been given, and the following day I found the delirium even worse than formerly. To be assured, however, that the medicines were administered, while in the house I saw the boy take one pill, and ordered another to be given in the evening, which he also took; and next day the delirium had completely disappeared and never returned. Several other similar cases have occurred to me; and, of the present epidemic, indeed, generally, I may make the remark, that I have not seen any case where the primary inflammatory fever did not seem to me capable of being easily moderated, but that both where local complications have existed, and where we have had to contend against the general fever alone, the greatest danger has often appeared to me to arise from the remedial means employed depressing the powers too much.

With the data furnished by these cases, it would perhaps be premature to venture upon a rational exposition of the manner in which the delirium and coma are produced. As far as I can perceive, however, the most legitimate conclusion to be drawn from them is either, 1*st*, that the morbid poison, which we may suppose to be conveyed in some way into the system, and to be the cause of all the symptoms, acts upon the brain in a manner analogous to large doses of ardent spirits or narcotics; or 2*dly*, that this is a disease of debility analogous to those head affections which occur from exhausting diseases or loss of blood, and in which, as is often remarked, some stimulant is the best remedy. The *apoplexia ex inanitione* of old authors appears to have been of this class; and Dr Abercromby, who has also met with several similar cases, has referred their cause to a deranged circulation in the brain. My data, however, will not allow me to speculate farther upon these points, and I must be content with stating the facts themselves which have occurred to me.

The only other, and perhaps to the pathologist the most interesting, point connected with this disease, which I have to notice, is the dropsy which so frequently succeeds scarlatina. Of this affection most authors I have consulted treat very slightly, and speak of it as a disease of little moment. Drs Cullen, Hamilton, Willan, Bateman, and Armstrong, all pass it over in the most cursory manner. Dr Wells * appears to have paid more attention to it, and gives some interesting extracts from a work by Plenciz, a physician in Vienna, who states, that in his practice it had been even more fatal than the primary fever. This last author's experience most nearly corresponds with what I have seen during the present epidemic. A large proportion of those affected with the primary disease have suffered from the dropsy; and of those who have been thus affected, I am confident I underrate the numbers when I say, that, during the greater part of the epidemic, not less than two-thirds would have been placed in the most imminent peril, had very active remedial measures not been employed.

In speaking of this complaint, Dr Armstrong remarks, "Dr Hamilton has reported the cases of three boys who recovered from the fever, and who, in two or three weeks from their convalescence, were attacked with dropsy, to which they all rapidly fell victims. Similar cases," he adds, "have come under my care; and it has indeed always appeared to me, that *fatal* dropsies are far more liable to supervene on the congestive than the other varieties of this distemper." On this last observation, that dropsy occurs most frequently after a severe primary fever, I may remark, that I have seen numerous cases in direct contradiction to it; and I may mention particularly two, which occurred to me at the very commencement of the epidemic, and before I was thoroughly aware of its dangerous nature. I was called to see a child in the Castle-Hill, whose face and extremities were slightly swollen. I made the most particular and repeated inquiries as to whether the child had been previously unwell, but received from its parents distinct answers in the negative. He had not, they told me, for a long time past, been confined to bed for a single hour. I prescribed some purgatives and diuretics, and thought it unnecessary to call back for two days. When I did call, to my utter astonishment, the child was dead; and, what no less surprised me, another child, an year or two older, was affected with precisely the same complaint, and was evidently also in very great danger. Upon examination, both of the dead and living child, I found circumstances so complete-

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* Trans. of a Society for the Improvement of Medical and Surgical Knowledge, Vol. iii.

ly in unison with my subsequent experience, and to which I shall immediately refer, as to leave no doubt upon my mind that both these were cases of dropsy after scarlatina. Indeed, I have since seen many cases in this respect exactly parallel to the above, that no primary fever or eruption had been noticed, although in all probability a slight affection had existed.

But, to proceed more systematically, upon what does this dropsy depend? On this point, Dr Armstrong remarks, "the dropsies of the chest and abdomen which supervene after recovery from the congestive form of the disease, are commonly the effects of a low inflammation of the pleura or the peritonæum, or of some obstruction left in the liver; and, therefore, those parts should claim particular attention for some time after the abatement of the original fever." Dr Armstrong does not state any other grounds for holding this opinion, than his *supposition* of great congestion having previously existed, and really I must say, that I doubt very much whether we can consider it in any other light than that of a pure hypothesis. The first circumstance which attracted my attention to the pathology of the dropsical affection succeeding scarlatina, was the remark made by Dr Blackall, and which had previously also been made by Dr Wells, that the urine in this affection was coagulable. Dr Blackall was not aware at the time this observation was made, of the connection which has subsequently been found to exist between the coagulability of the urine and disease of the kidney.

This subject has been, since the time of his publication, investigated with great zeal by Drs Bright, Christison, Gregory, Alison, and others; and it seems now to be satisfactorily established, that the connection between them, in conjunction with other signs, is tolerably uniform. These authors mention, only very cursorily, the coagulability of the urine during the continuance of the dropsy of scarlatina; and I know of no one whatever who has published an account of the appearance which the kidneys present in this disease. Keeping the fact ascertained by Dr Wells and Dr Blackall in view, I long ago resolved to take the first opportunity of satisfying myself on this point. During this epidemic, I have had ample opportunities of making observations, and of these I shall here give a short account.

In the primary fever in most cases which have been for some time under treatment the kidneys have presented an unusual appearance. Generally they have been more or less mottled externally, but in some of a pinkish appearance. In one very bad case, (Eckford,) the particulars of which I have already mentioned, they were softer than natural, marbled-looking externally, very dark red interiorly,—in the tubular structure particularly, the colour was so dark as to render the striated appearance hardly discernible. In one instance something like petechiæ were observed on the surface. Where the dropsy has been present, the alterations have been much more decided. They have presented just the appearance of kidneys in the first stage of Bright's disease, and the alteration in structure has mostly been in proportion to the length of time which the disease has continued. This circumstance, however, I have remarked, that the cortical substance has never presented, except very slightly in one case, the granular appearance seen in the advanced stages of Bright's disease; nor has the tubular structure ever appeared to me to have been encroached upon,—which is, perhaps, from the recentness of the attack, just what we should expect. With this exception, the kidney of the girl, and whose case I have already mentioned, who was carried off after an illness of five or six weeks, from the occurrence of dropsy and undermining ulcers round the neck, appeared to me in every respect similar to that of a female who died in the clinical wards of the Edinburgh Infirmary about eighteen months ago, and which was considered by Dr Alison a very fine specimen of the disease. In fact, in the girl I allude to, both kidneys externally, and the cortical substance internally, with the exception of a bluish black patch on the extremity of one of them, were converted into a straw-coloured mass.

In the case of a boy who died from a chest affection, very early in the disease, both kidneys were mottled externally, and one was softer, and the other harder, than natural. In a more advanced stage, the mottled appearance becomes more evident, and the lighter colour of the cortical substance is extremely distinct when a section of the kidney is made. In a still more advanced stage I have found them of a whitish cream or straw colour, bearing a considerable resemblance to Dr Bright's 2d fig. of plate 2, and figs. 1st and 2d of plate 4. Of some of these I have procured drawings, and I have shown the kidneys themselves to Drs Christison, Gregory, Alison, Craigie, and a number of other gentlemen, who all appear to entertain no doubt as to these being specimens of Dr Bright's disease in an early stage. I have not seen any instances of the kidney having still further degenerated, as, within five or six weeks from the commencement of the dropsical affection, the patients have either recovered, or have been cut off by the supervention of some acute secondary affection.

I have also examined the qualities of the urine in scarlatina, and of these I shall give a very short account, leaving out all the circumstances not essential to an understanding of the case.

The urine of a girl who had been complaining the day before, and upon whom the eruption had just appeared, was found small in quantity (five or six ounces in about nine hours), very thick and muddy, and of the specific gravity 1032, water being taken as 1000. When heated to the boiling temperature, it became clear but did not coagulate.*

In the case of a boy, (John Gunn, aged 11,) who had been ill three days, and who had a rather severe attack, the following observations were made: November 20. Vivid eruption on the body; specific gravity of urine 1026, not coagulable.

Nov. 25. Eruption faded; apparently recovering; skin desquamating; sp. gr. of urine 1011, not coagulable, and moderate in quantity.

Nov. 27. Skin still desquamating much; pulse regular, and appetite good; sp. gr. of urine 1010, slightly coagulable

Nov. 30. Recovering rapidly; pulse 61; divided the urine made during the day into two portions. The sp. gr. of that made from 8 A. M. till 2 P. M. was 1022.5, not coagulable; that made from 2 till 9 P. M. 1023.5, not coagulable,—the whole quantity made about natural,—average 1023.

In the following days, this patient's urine was divided into three portions; the first passed from 9 P. M. till 8 A. M.; the 2d from 8 A. M. till 2 P. M.; and the 3d from 2 till 9 P. M.

Dec. 1. Convalescent, 1st portion of urine sp. gr. 1014, clear yellow colour, hardly coagulable; 2d portion, sp. gr. 1025, yellow, muddy, not coagulable; 3d portion, sp. gr. 1028.5, clear yellow colour, not coagulable; average 1022.5.

Dec. 2. First portion of urine large in quantity, sp. gr. 1008, slightly coagulable; 2d portion clear yellow, with considerable sediment; sp. gr. 1009, not coagulable; 3d portion yellow, sp. gr. 1013, not coagulable; average 1006.75.

Dec. 3. First portion of a clear yellow colour, sp. gr. 1016; 2d portion of a muddy yellow colour, sp. gr. 1030; 3d portion clear yellow colour, sp. gr. 1016; average 1020.66.

The next patient (Mary Gunn, aged 5,) had a mild attack of scarlet fever, about a fortnight previous to Nov. 20, when I first saw her. This child was complaining slightly, but was not in the least swelled. The sp. gr. of the urine was 1028, and highly coagulable.

Nov. 24. Considerable anasarca had now taken place, sp. gr. of urine 1013, highly coagulable, moderate in quantity. Ordered digitalis and squills, supertartrate of potass, and purgatives.

Nov. 25. Had been feverish and much depressed all day; urine high-coloured, sp. gr. 1013, highly coagulable.

Nov. 26. Continues feverish and very much depressed; urine the same as yesterday.

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* I may mention, that, in all cases in this paper, when I say the urine was coagulable, I mean by heat, as I did not employ any other test.

Nov. 27. Out of bed, and considerably better; swelling less; sp. gr. of urine 1011, still high-coloured, but not quite so coagulable.

Nov. 29. Anasarca much less; sp. gr. of urine 1011, but much less coagulable, and not so high-coloured.

The urine of this patient, in the same manner as in the preceding case, was now divided into three portions.

Nov. 30. First portion, not so yellow as natural, sp. gr. 1013, not very coagulable. The second portion had the appearance of a small quantity of blood mixed with a considerable portion of pure water, sp. gr. 1012.5 rather more coagulable than first portion. Third portion, sp. gr. 1017, about as coagulable as first portion, of a deeper crimson colour. (The whole quantity made in the twenty-four hours was about two quarts.) Average 1014.17.

Dec. 1. Anasarca nearly gone; appetite good; first portion of urine of a pinkish colour, sp. gr. 1012.5; second portion hardly at all pink, sp. gr. 1012; third portion, sp. gr. 1018, of a deep-red brown colour. Has been taking no medicine for two days, except supertartrate of potass, diluted in water, as a drink. Average 1014.17.

Dec. 2.—Continues well; the first portion of urine was of a yellow colour, and had deposited a dark-brown sediment; sp. gr. 1018, slightly coagulable; second portion of a light-crimson colour, sp. gr. 1018, rather more coagulable; third portion of a deeper crimson colour; sp. gr. 1009; average 1015.

Dec. 3. Convalescent; has taken no medicines since yesterday. First portion of urine of a red-brown colour, sp. gr. 1020, coagulable; second portion very dark-brown, sp. gr. 1024, strongly coagulable; third portion clear, deep-crimson colour, sp. gr. 1008, coagulable; average 1017.33; (about the natural quantity had been made each time.)

I had hoped to have been able to obtain an analysis of some of the urine of the two last patients, in order to ascertain whether it was similar to specimens of the urine of patients labouring under Bright's disease, which had been analysed by Dr Bostock; and Dr William Gregory had, with great kindness, engaged to make this examination. I have, however, received a note from him stating, that the time allowed him before this Journal would go to press was so limited, as to enable him to ascertain only the density and coagulability of several specimens of urine, which have been already stated in the notes of the cases, with this difference, that on November 27, it is stated that the urine of John Gunn was "slightly coagulable," while Dr G. makes it "coagulable." Of the urine passed by the boy on November 27, he remarks, "tested in the usual manner for urea, it appears to contain a considerable quantity of that substance," and of that passed by the girl on November 27, he says, "tested for urea, it was found to contain a large quantity,—I should think not less than healthy urine."*

The next patient (Martin, 4½ years old,) upon whose urine I made observations, had the primary fever about the end of October. On November 15, considerable anasarca made its appearance. The urine was then made in small quantity, and was highly coagulable, but I did not note its density.

Nov. 20. Continues free from any urgent symptom, but is greatly swollen; urine high-coloured and muddy; sp. gr. 1020, highly coagulable.

Nov. 24. Has considerable difficulty of breathing; sp. gr. of urine 1016, highly coagulable, same appearance as formerly, and made in small quantity.

Nov. 25. Difficulty of breathing has increased; urine made in small quantity.

Nov. 26. Difficulty of breathing has increased considerably; the boy evidently in a very dangerous state; urine still scanty, sp. gr. 1019, still very coagulable and muddy.

Nov. 27. Died this morning.

On dissection it was found that a large quantity of fluid had been effused into the chest, and that the kidneys were of a brownish cream colour externally. Internally the cortical substance presented a similar appearance. This was one of the specimens to which I referred, when I said that they had been seen by Drs Christison, Gregory, Alison, and Craigie.

In the case of a boy, (John Watson,) who had had a very severe attack of the primary fever, about twelve or fourteen days from its commencement, the sp. gr. of the urine was found to be 1017, and otherwise natural; and in six days afterwards, (Nov. 14,) it was found to be 1014, and not coagulable. At this time he was convalescent.

Dec. 2. Continues well. The urine made during twenty-four hours was divided into three portions. First portion, made last night before going to bed, pale, muddy, sp. gr. 1023; 2d portion, made during night and forenoon, sp. gr. 1019; 3d portion made during afternoon 1014—average 1018.66. The quantity of urine made was natural, and was not coagulable.

In the case of a boy (Turnbull, 5½ years old,) who had been ill with the primary fever about a month before, and who had become anasarcous about a fortnight previously, the quantity of urine made in twenty-four hours was about twelve ounces, and had a very muddy or rather sero-purulent appearance; it became clear when heated, and when raised to the boiling point it coagulated strongly. In this case, I was surprised to find the sp. gr. 1038. Next day I tried the sp. gr. of the urine. It was 1034, and strongly coagulable. The day after this it was made in very small quantity indeed; and the following day the boy died. The kidney was found very much diseased.

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* Dr Gregory generally states the density at about a degree higher than was indicated by my hydrometer. Perhaps this may have arisen from the higher temperature of Dr G.'s laboratory. In one case I have found that the urine in falling from the temperature of 90° to that of 52°, gained 4° in density; and in another case in falling from 90° to 60°, it gained 6°.

The urine of a boy, (Sibbald, 3 years old,) who had suffered from a severe and protracted attack of dropsy and chest affection, but had partially recovered for about two months, was found to be 1019, and not coagulable.

A boy, (Watt, 10 years old,) whose case will be subsequently referred to, who recovered from the most severe attack of anasarca and its complication I have seen, was found to have the urine, after having been convalescent nearly three months, as follows;—urine passed from 9 P. M. till 8 A. M of a clear yellow colour, sp. gr. 1022; urine passed from 8 A. M. till 3 P. M. clear yellow colour, sp. gr. 1016; urine passed from 3 till 9 P. M. nearly colourless, sp. gr. 1008; average 1015.33. These three portions were all natural in quantity, and not coagulable.

Divided in the same manner, this boy's sister, (11 years old,) who had been attacked by slight anasarca at the same time, was found to have the urine as follows: 1st portion, sp. gr. 1027; 2d portion, 1007; 3d portion, sp. gr. 1028; average, 1020.66; natural in quantity, colour, and coagulability.

Another boy's urine, (Dawson, 9 years old,) who had been ill at the same period as the two last patients, and whose abdomen had been enormously distended, apparently with effused fluid, when divided into three portions similar to the last, was found to be as follows: 1st portion, sp. gr. 1019; 2d portion, sp. gr. 1016; 3d portion, sp. gr. 1018; average, 1017.66; natural in colour, quantity, and coagulability.*

I have tried the density and coagulability in a great number of other cases, and, as a general observation, I may state that, except in one instance already mentioned, (Turnbull, where the density was 1038,—for coagulable urine, I believe the highest recorded,) I have always, where anasarca had already commenced, found the density below 1025, and commonly ranging from 1011 to 1017. When the patient has been recently attacked by the anasarca, the thick muddy appearance of the urine, and strong coagulability, have been invariable, and it has generally been made in small quantity.

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* As a standard of comparison with the foregoing, I have taken the sp. gr. of the urine of two persons in perfect health at different periods of the day, of which the following are the results: In the first, taken five times during the twenty-four hours, the highest density observed was 1023, the lowest 1021; average, 1022. In the second, taken seven times during the twenty-four hours, the highest density observed was 1034.5, and the lowest 1014; average, 1026.3. In both the quantity, &c. were natural. I also took the sp. gr. of the urine of a patient supposed to have been ill for some time with Bright's disease, of which the following are the results: Urine passed from 11 A. M. till 2 P. M. sp. gr. 1012; from 2 till 6 P. M. 1013; from 6 till 9 P. M. 1009; average, 1011.33; quantity natural, not coagulable. The average sp. gr. of healthy urine, Dr Alison thinks is about 1025.

In regard to the urine passed at different periods of the day, the variation in its coagulability will be seen not to have been great. The density, however, as will be perceived, varied considerably, although the average density was in general decidedly lower than that of healthy urine. A knowledge of the variations which occur in the density of the urine during perfect health would have led us to anticipate these differences; and, indeed, if I were to draw any inference from these observations, (which certainly are far too limited to warrant any *general* conclusion,) it would be, that the range of density, as well as its average, becomes comparatively greater in proportion as the kidney returns to its healthy state. As to the cause of this variation, I must confess I do not see any very satisfactory explanation. No doubt, the density of the urine must be much influenced by the quantity and kind of ingesta; the length of time it is retained in the bladder; and a number of other circumstances. But still, making every allowance for these, it seems to me difficult to explain, how, for example, as in the case of the boy and girl Watt, nearly of the same age, and living under nearly similar circumstances, it should vary in the one, when passed at two not distant periods of the day, 14°, while in the other, at two different periods of the day, the variation should be so great as 20°; or how in two healthy individuals, living in a nearly similar manner, and taking nothing unusual, it should vary in the one only 2°, while in the other it varied 20½°. One inference we may, I think, draw from it, viz. that it must be fallacious to take any other than the average density for the twenty-four hours.

The colour of the urine also, it will be observed, in the case of the anasarcous patient, Mary Gunn, was considerably influenced by the times at which it was passed. In two out of four trials that passed from 9 P. M. till 8 A. M. was found yellowish, and in the other two darkish brown. In two out of four trials that passed from 8 A. M. till 2 P. M. was light crimson, and in the other two, this was more or less mixed with yellow; and in that passed from 2 till 9 P. M. in three out of four trials, the colour was of a dark crimson, and in the other mixed with yellow.

Admitting that this degeneration of the kidney is similar to, or identical with, that described by Dr Bright, we gather from what has been stated, a remarkable contradiction to the opinion generally entertained, that it is almost solely the adult that is liable to this disease. How far severe attacks of the kind I have to describe may be connected with subsequent similar affections, of course it is impossible for me as yet to form a correct opinion; but from all I have seen of the dropsical affection succeeding scarlatina itself, I should be inclined to conjecture, that, unless some other local disease become conjoined with it, the degeneration of the kidney very seldom alone proves fatal; and further, if we may judge from analogous cases where we have had an opportunity of making an examination when chest affections have proved fatal, that at least young patients often recover where this degeneration must have gone on to a considerable extent. Perhaps it may be said that these may prove to be mere temporary recoveries; but I apprehend, if relapses in this disease were at all common, it must have been noticed by the different authors who have written on the subject.

In regard to the time when the disease of the kidney commences, the cases I have related furnish us, I think, with some interesting facts, 1*st*, The girl Gunn's urine was strongly coagulable (though high in density,) before any anasarca appeared; but, whenever the anasarca appeared, it sunk in density as many as fifteen degrees, though the quantity made was less than previously. 2*d*, The powers of the kidney in the boy Gunn appear to have been remarkably affected as early as the eighth day from the commencement of the primary fever, (although no dropsy every appeared in this patient,) for, from within five days previous to that day, we find that the density of the urine had sunk also fifteen degrees, and that it had become somewhat coagulable. 3*dly*, It may be presumed from this, (and the same remark may be applied to other cases,) that the kidneys of the boy Martin, which we found so much diseased, had become affected some time before the anasarca, which appeared only ten days previous to his death, gave indications of the existence of any disease.

Dr Wells states, very correctly I believe, that the dropsy of scarlatina generally commences about twenty-two or twenty-three days after the preceding fever, but does not appear to have seen any case which commenced earlier than the sixteenth day or later than the twenty-fifth. Cases have occurred to me, however, in which the dropsy succeeded almost immediately the decline of the eruption, which had been out for only four or five days; and I have seen one in which the interval between the commencement of the primary fever and the dropsical attack was five weeks. Dr Darwall * mentions the case of a young woman in which the interval appears to have been six months. Perhaps, however this was a mere coincidence. Dr Wells has also remarked, that frequently two or more members of the same family have been affected with this disease, and I have myself noticed the same circumstance. This Dr Wells supposes to arise from similarity of constitution and sameness of external circumstances. Perhaps we may find in it a confirmation of the remark made by Dr Gregory, that it is individuals of a strumous diathesis who are most liable to be affected by this degeneration of the kidney. At all events, I have found, in several of the fatal cases, either tubercles in the lungs, or deposits of calcareous matter, the apparent indications of such having existed; and in some instances I have found upon inquiry that other members of the family had died with symptoms of phthisis.

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* Encyclopædia of Practical Medicine, Part 6.

The dropsical attack is generally preceded for a day or two by paleness of countenance, anorexia, and a somewhat leucophlegmatic appearance; and when swelling of the face and extremities has taken place, this is generally accompanied by more or less fever. In some cases also I have noticed that nausea and vomiting have been rather urgent.

I believe that this is a disease, for the removal of which very simple means are commonly sufficient, and certainly where no local complications have occurred I have found it so; but, as I have already stated, in the districts in which I have visited patients, it has required the most unremitting attention to prevent these from running on to a fatal termination. The most common and the most dangerous have been those of the chest. These I think may be divided into two kinds, viz. 1*st*, those resulting from inflammatory action, and 2*dly*, those where life has been extinguished by effusions into the pleuræ or pericardium. The first have been the most frequent and the most difficult to subdue, but both have frequently coexisted. I have had under my own care, and subsequently examined two cases where death appeared to have taken place purely from effusion into these cavities. By the politeness of Mr Graham, surgeon in this city, I was present at another dissection, in which, with the exception of a small portion of the lung which was hepatized, similar appearances were presented. In two of these cases, several quarts of serous fluid were found in the chest, but in Mr Graham's case a larger quantity was effused into the pericardium than in the others. In all the three also I may remark the heart was decidedly enlarged. The œdema in Mr Graham's patient had commenced about fifteen, in one of my own about ten, and in the other about seventeen, days before death. In these cases some parts of the lung were somewhat œdematous, and a considerable part, especially of the lower lobes, presented a fleshy appearance; that is, they were neither so red nor so friable, as in the hepatization rouge, but were somewhat of a slightly reddish slate colour, and in many parts gave out not a particle of air when pressed. This condensed state of the lung, apparently in a great measure the result of mechanical pressure, was beautifully seen in a dissection of a scarlatina patient six years old, at which Mr M'Gilpie was kind enough to allow me to be present. The right *pleura costalis* was intensely inflamed, and presented an extensive effusion of lymph, having a honeycomb appearance; about three quarts of sero-purulent fluid were found in the right cavity of the chest, and the lung was compressed into about the size of half an ordinary man's fist. This patient had become œdematous several weeks before death.

The principal chest affection, however, has been pneumonia, running on, in most cases, with great rapidity. In the course of two days and a half or three days, I have seen two-thirds of both lungs pass into the state of red hepatization. In one patient I have found part of the upper lobe of one lung in the third or grey state of hepatization, which, I conjectured, had been the result of an attack about three weeks previous to death. Extensive recent hepatization, however, in both lungs, was the immediate cause of death.

The diagnosis in these two kinds of chest affections has seemed to me a matter of some moment, and occasionally of no little difficulty. The mere suddenness of the attack, and the difficulty of breathing, are not sufficiently diagnostic of either, for in most instances they are common to both. Considerable assistance, however, I think, may be derived from attending to the state of the pulse, from the absence or presence of cough, and more especially from the use of the stethoscope, and from percussion. In the inflammatory attack the pulse from the commencement is generally much stronger, and harder, and very frequent, the temperature higher, the cough more urgent, and the *râle crepitant* may often be heard. On the other hand, where the effusion to any extent has taken place, the stethoscope indicates faintness or want of the respiratory murmur in the low and dependent parts of the chest; and dullness of sound on percussion goes along with this. In young children the phenomena dependent on the voice are not so easily obtained. The one, in fine, has decided inflammatory symptoms,—the other in a great measure wants these.

Of the other complications, dysentery has been the most frequent I have witnessed. In one case, to which I have already referred, the patient was carried off by an attack of peritonitis.

To give an idea of how variable, even in the same individual, these complications may be, I may mention the following case. —A boy (Watt) in Arthur Street, who had laboured for some weeks under an attack of dropsy, had first a threatening of pneumonia; in some days afterwards all the symptoms of violent pericarditis; then next day peritonitis; and, immediately after this had been subdued, severe diarrhœa. This patient, certainly much contrary to what I expected, ultimately recovered.

I have not seen any dropsical case in which head symptoms were present.

In the treatment of this disease, the principal attention has been directed to the affections of the chest, and where the dangers arising from these have been obviated, the dropsy itself and the other complications, though sometimes a little obstinate, have not been in general unmanageable. The dropsy has generally been treated with supertartrate of potass, squills and digitalis, and purgatives; and the exhibition of these, with occasionally the application of a few leeches, has almost always, when persevered in, had the effect of removing the effused fluid. Even the chest affections, it has seemed to me, when taken sufficiently early, can generally be subdued without much difficulty. My usual practice has been, when the patient was seen before any chest symptoms appeared, to order a quantity of leeches to be kept in the house, with directions to apply them the instant the breathing should become difficult; and in at least nine cases out of ten where this has been attended to, the symptoms have been either moderated or removed. When I have been called to a case where the symptoms have been more urgent, I have thought it important to attend to the distinction I have already pointed out. Even, however, where the dangers appeared to arise principally from the effusion, whenever the strength would allow it, I have judged it safe to premise leeches and a blister, and I have generally found that these have given at least temporary relief.

In the after-treatment of the latter description of cases, the diuretics already mentioned, along with small quantities of gin or whisky, have been mostly trusted to; but when this affection has been allowed to go on for some time unchecked, diuretics frequently seem wholly to lose their effect. When called to such cases at a still later stage, the only hope of relief has appeared to me to be derived from stimulants. Of this the following seemed to me at the time a striking instance. Late one evening I was urgently requested to visit a girl in Brown Street, 4 or 5 years old, who I was told was dangerously ill of dropsy succeeding scarlatina. I immediately visited her, and found the extremities cold, the face pale, the lips livid, and the respiration labouring,—in fact, the girl was in such a state that I felt certain she could not survive till morning. I ordered gin or whisky toddy in as large quantities as the child would take it, and a blister to the chest. Next morning I found that the mother of the girl had given her half a gill of whisky made into toddy, which she had drunk with avidity, and that a great improvement had taken place. The flow of urine became more copious, and the child recovered without almost any other assistance.

Where the symptoms have indicated the existence of pneumonia or pleuritis, the treatment adopted has been strictly antiphlogistic. Bleeding from the jugular vein or with leeches, and the antimonial wine in full doses, have been chiefly relied on; but it has been necessary in many cases to bleed repeatedly and very actively before the attack has been overcome.

In several instances, where the dropsy has been obstinate, acting upon what has appeared to me to be the true pathology of the disease, I have applied leeches and blisters to the region of the kidneys; but the number of cases in which this practice has been employed has been too limited to enable me to pronounce any decided opinion.

The prepuce and scrotum in some instances have swollen to an alarming size; to such a size, indeed, as to have tempted me at first to draw the fluid off; but I have found, that, by perseverance in the use of the diuretics and purgatives I have mentioned, and occasionally a few leeches, the whole would sometimes be absorbed in two or three days. The same remark may, I think, be applied to the ascites occurring here, of which I have seen only one really good example. If, indeed, paracentesis be indicated in any case, I should be inclined to think, it would be rather when the fluid has accumulated in the chest than in the abdomen; for where the effusion into the chest is the cause of danger, if we can by any means keep the patient alive for only a short time, the chances are, either that a spontaneous diuresis will occur, or that the system will come to be acted on by the medicines prescribed.

I cannot conclude this paper without expressing my obligations to several gentlemen who have assisted me during these observations, and more particularly to Dr Spittal, to whose enthusiasm for, and knowledge of, pathological investigations, I have been much indebted.

PART II.

CRITICAL ANALYSIS.

Art. I.—*Histoire Generale et Particulière des Anomalies d'Organisation chez l'Homme et les Animaux, &c.—General and Particular History of Anomalies in Organization in Men and Animals, embracing researches into the Characters, the Classification, the Physiological and Pathological Influence, the General Relations, the Laws and Causes of Monstrosities, or a Treatise on Teratology.* By M. Isidore Geoffroy St-Hilaire, M. D. &c. Vol. I. with Atlas. Paris, J. B. Bailliere, 1832. 8vo, Pp. 746.

Whoever has looked into the history of monsters, as given by Fortunio Liceti, Aldrovandus, Mercurialis, and Ambrose Paré, must have been alternately amused, astonished, and shocked at the gross credulity and the unlimited appetite for marvellous stories with which the writings of physicians and surgeons at that period abounded on this subject. Not satisfied with inquiring previously whether everything recorded was fact, they seem to have imagined, that, whatever of this kind was most unnatural, most singular and incongruous, ought to be treasured with the most vigilant interest, and embellished with a due proportion of fancy; and the more extravagant the artificial union of these discordant parts was, the more fitted for the purpose of the writer. Hence it is that in these singular and apocryphal products of the human fancy, a fish in the garb and appearance of a monk, a man with the head and face of a greyhound or fox, and the goat-limbed satyrs of antiquity, are gravely given as examples of monstrous productions.

We find, nevertheless, in different monographic dissertations, and in the periodical works of the latter half of the seventeenth century, various authentic and well-told records of monsters; and Bartholine, Heyland, our countrymen Lower and Adams, Steno, Jacobæus, Waldschmidt, J. M. Wepfer, Hoffmann, Littre, and Mery, may all be mentioned as rational narrators of ascertained facts, with a much smaller admixture of fancy and credulity than it had hitherto been the practice to admit.

The first great repository of facts, extraordinary and scientific, at this period was the *Miscellanea Curiosa*, or the Acts of the *Academia Naturæ Curiosorum*—a stupendous collection of all sorts of curiosities, some foolish enough, others valuable and interesting. In the early volumes of this work we find numerous records of monstrosity, several of them indeed breathing the credulous and superstitious spirit of the age, others, however, good and well-told narratives of simple facts.

An infant, with two bodies united to one head, and a double set of thoracic and abdominal viscera, had been born at Giessen in Hesse, in 1664; and of this Michael Heyland gave a short and distinct account. The same year a woman at Vienna produced dead twins, united by the lateral margins of the head, neck, and trunk, and with two arms only but one leg; and of the anatomical structure of this, George Greisel gave a short account.[*] A uterine product with two heads but only one body, two arms and two legs, which had occurred at Groden in 1658, was described and delineated by D. Melchior Fribe;[†] and in 1669, D. Charles Rayger described the anatomical structure of one which occurred at Posen, with two heads, three arms, but one body, and two feet.[‡] And on occasion of two others, in 1684, one at Marbach in the Marpurg territory, the other in Collar, a village near Giessen, Michel Bernard Valentin gave a short account of their chief peculiarities, and soon after addressed to Dorsten, the professor at Marpurg, a letter containing some judicious remarks on the subject.[§]

That we might not be destitute, however, of a proper contrast to these simple statements of facts, we have, at the same time, recorded with equal gravity, and delineated with no less fidelity, the similitude of human heads in turnips and cabbages; nay, in one instance, an account of a figure of the crucifixion in a cabbage;[||] a figure of the blessed Virgin and her infant in a piece of iron ore; and lastly, we find George Abraham Mercklin,[¶] John George Sommer, and John Maurice Hoffman introducing cases to illustrate the influence of the imagination in causing monstrous conceptions.[**]

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[*] Miscellanea Curiosa, 1670, p. 152.

[†] Ibid. 1673, p. 296, Obs. 165.

[‡] Ibid. 1670, p. 25.

[§] Ibid. 1685. p. 190 and 475.

[||] Ibid. 1670, p. 260, Obs. 111.

[¶] Ibid. p. 264, Obs. 113.

[**] Ibid. 1675, 1683, 1686.

Notwithstanding these proofs of gross credulity and blind superstition, however, this was beginning to be the age of accurate observation and correct anatomy; and numerous insulated records of monstrous productions were communicated to the scientific world by different individuals. In the appetite for monstrosity, indeed, it sometimes happened that mere disease was referred to this head; and Oliver Jacobæus, a learned Dane, the friend and contemporary of Sydenham, Brown, and Green, recorded as monstrous a case of chronic hydrocephalus, which occurred in the practice of Dr John of Windsor, and the case of an infant born at Bristol, whose limbs were said to be void of bones, but which appears to have been merely an aggravated case of rickets. At this period, independent of the vague notions attached to the term, all monsters appear to have been regarded as *lusus naturæ*, or random and accidental products of the generative principle.

The first person who appears to have considered the subject of monstrosities in a philosophical light, and on general principles, was Duverney, who, in a memoir on the subject of two infants united by the lower part of their person in 1706, attacked and refuted the reigning opinion, that monsters are the result or offspring of monstrous *ova* or germs; and maintained that they were not mere fortuitous products; and that it was in all cases possible to recognize proofs of organization and design, however imperfectly they might be completed.

The subject was next investigated by M. Lemery, who, in different papers published in the Memoirs of the Academy of Sciences in 1724, 1738, and 1740, endeavoured chiefly to refute the idea of monstrous *ova* or germs, and to maintain the doctrine of the influence of accidental causes. Winslow soon after, in a series of five elaborate memoirs, in which he examined the facts of most of the instances of monstrous formation then recorded, after much discussion and investigation, arrived at the conclusion, that the two systems of monstrous original developement and fortuitous monstrosity may be applicable to different cases; that in certain cases one only ought to be employed as sufficient to the explanation of the phenomena; that there are cases in which it may be requisite to have recourse to both; and that in several instances anatomists and physicians may be at a loss which side to adopt.

The memoirs of both authors, though rather prolix, and too much pervaded with analogical reasoning and metaphysical speculations regarding final causes, are nevertheless most instructive and ingenious productions in every sense of the word; and they evidently tended, in a very remarkable degree, to introduce more precise ideas and more rational sentiments on the subject of monstrous productions generally. In the hands of Lemery and Winslow, it may be said, that the history of monsters, which had previously been a disorderly and unconnected assemblage of marvellous facts, began first to assume the generalized and methodical characters of a branch of interesting physiological inquiry.

Winslow had scarcely finished the second part of his memoir, published in the Memoirs of the Academy for 1734, when Haller, ever assiduous and inquisitive, undertook and completed a most elaborate investigation of the subject, and examined all the recorded cases, to the amount of 500 at least, of the most authentic, of which, however, not more than forty were anatomically inspected. At the time when Winslow and Haller wrote, the question which chiefly occupied the minds of physiologists on the subject of monsters was, how the existence of such productions could be reconciled with the wisdom and benevolence of the Supreme Being, who, it was said, could create nothing imperfect, and nothing destined to such a brief life of misery as most of these beings must necessarily lead? Haller had the judgment to divert the inquiries of his contemporaries from the metaphysical part of the subject, and direct their attention to the study of the facts, and their classification, as the only legitimate object of inquiry, and the only method of succeeding in its elucidation. This memoir, which he afterwards published in the third volume of the *Opera Minora*, formed a new era in the history of monstrosities, contains all the useful and authentic information which had been then recorded, and may be regarded as the basis of the modern doctrines on the subject.

Though numerous papers on individual instances of monstrous formation have been published since the time of the physiologist of Gottingen, and several short essays on the subject generally have appeared in the shape of inaugural dissertations, or express treatises, we can scarcely mention one which deserves particular attention, except the valuable commentary of John Frederic Meckel, *De Duplicitate Monstrosa*, or the monstrous duplication of parts, published at Halle and Berlin in 1815. This able and learned anatomist had recognized the truth, so often repeated and impressed by Duverney, Haller, Wolff, the second Monro, Hunter, and Soemmering, that, though not immediately or evidently connected with practical results, the records of cases of monstrosity were by no means void of utility; but he had also, with great sagacity, been enabled to trace the general and special laws by which this species of monstrosity is regulated. Among the former he classes hereditary and family influence; the influence of enfeebled parents, as indicated by a sickly short-lived offspring; the excess of parts in one organ when those of another are defective, and conversely; that of defect being much more common than excess of parts; the fact of the greater prevalence of monstrosity in female than in male animals, and that of certain organs being much more liable to monstrous formation than others.

Since the time of Meckel this subject has engrossed the attention of Breschet, Dupuytren, Delpech, in France; of Oken, Treviranus, and others, in Germany; and, by the researches of many separate inquirers, its facts have become more multiplied, its doctrines more stable, and its obscurities more intelligible.

The present work may be regarded in the light of an attempt to exhibit a general view of the subject of monstrosity, by classifying its facts, and deducing from them those general conclusions which may tend to illustrate and explain the different anomalies of structure which are presented by the orders of the mammiferous class of animals, but especially by the individuals of the human race. For this undertaking the author, who is the son of M. Geoffroy St-Hilaire, ought, by his opportunities, to be well qualified; and accordingly, we find no lack of facts, and no deficiency of arrangement. We cannot help thinking, however, that the work is pervaded by an error throughout, in giving too great latitude to the term monster, and hence making every variety of deviation from the standard shape, size, and structure of organs, examples of monstrosity. The result of this is, that several deviations, which must be regarded as the effect of disease, are referred to the head of monsters; and in several instances we meet in the class of monstrous formations, such slight deviations of size and figure, as might easily, by common observation, be regarded as mere varieties, or at most as malformations.

Instead of stating our objections at the beginning, however, we shall proceed at once to communicate to our readers some idea of the manner in which M. Isidore Geoffroy St-Hilaire treats the subject.

Every genus and species of animal presents, M. Isidore Geoffroy St-Hilaire tells us, a certain assemblage of characters of size, shape, and structure, and arrangement of internal organs, to which he applies the name of *specific type;* and every deviation from the specified type constitutes what is named an *anomaly*. In a sense synonymous with this, the word *monstrosity* has been used, the present author states, by modern writers principally; and according to this view, every deviation from the *specific type*, from the most trivial and inconsiderable to the most impressive,—from the unwonted insertion of a vascular or nervous twig, to that which implies incapability of existence, or change in the shape, disposition, structure, and number even of organs essential to life, becomes a *monstrosity*. Other authors, on the contrary, by a more restricted view of the term, have referred to this head only the most remarkable and apparent anomalies; and this example in the present work, M. I. G. St-Hilaire professes to follow.

The division of the subject which appears to him most eligible is founded on three considerations; *first*, the nature of the anomalies; *secondly*, the degree of their anatomical complication and severity; and, *thirdly*, the influence which they exercise on the functions.

In the *nature* of the deviations, M. I. G. St-Hilaire conceives the possibility of four sorts of anomalies more or less frequently presented to observation. *1st*, An individual may present states of the organs, which, in reference to the standard, are met in no species. *2d*, He may present conditions of the organs which, in reference to the standard, are met in one or more species, but not in that to which he belongs. *3d*, He may present organic conditions which belong to his own species, but not to the age at which he is. And *4thly*, and *lastly*, he may present organic conditions which, though belonging to his species and age, do not belong to his sex.

Thus individuals who present in their organization the general characters of males may, in certain respects, possess the organs of the female; and conversely, individuals with the general character of females may possess several of the peculiarities of the male, so that in the same individual an imperfect form of the organs proper to both sexes may be united.

All these cases of anomalous structure are known by the geral name of *hermaphrodism*, and form a distinct natural assemblage of monstrosities already recognised by authors, especially Blumenbach and Meckel. It is unfortunate, however, that the groups indicated under the three first heads, however natural they may be, and however distinct in theory, are confounded by so many points that they do not admit of practical application. It is hence requisite to form for these another mode of classification, and therefore M. I. G. St-Hilaire refers them to one or other of the following four divisions; 1. *Simple slight anomalies*, not impeding function or inducing deformity, constituting mere varieties; 2. Simple anomalies, trifling anatomically, but impeding or annihilating function, or causing deformity,—*malformations*, (*vitia conformationis*;) 3. *Complex anomalies*, considerable anatomically, but not appearing externally, and not interrupting the accomplishment of any function, denominated *heterotaxiæ* by the author; and, lastly, *Very complex extreme anomalies*, impeding, or entirely interrupting, the accomplishment of one or more functions, or producing in the individuals affected by them a faulty and very different conformation from that belonging to the species. The last order, the most considerable of all anomalies, constitutes the class of genuine *monstrosities* or monsters.

It is easy to see in this mode of distinction, that *monstrosities* differ from *heterotaxies*, in presenting a higher degree of anatomical complication, as well as by their physiological influence on the functions; while the *malformations* again, though physiologically different from the class of *varieties*, can scarcely be distinguished from them anatomically. In consequence of this natural affinity, M. G. St-Hilaire proposes to arrange the varieties and malformations in one class or group under the same general head, to which he proposes to apply the general character and denomination of *semi-monstrosities*, or *hemiteries*, (ἡμι τερας,) because, though deviating from the standard type, they do not recede sufficiently far to constitute complete monstrous productions. On these principles he obtains a general division of anomalous productions in the following manner.

Anomalies,
- Simple. Hemiteries.
  - Varieties.
  - Malformations.
- Complex.
  - Heterotaxies.
  - Hermaphrodisms.
  - Monstrosities.

The severity of these several forms of anomaly may be most accurately estimated by their respective effects on the different functions; and consequently, those which implicate the functions devoted to individual preservation are in all cases much more serious than those confined to the functions of reproduction, which, indeed, though very well marked, by no means interfere much either with the life or the comforts of the individual. Anomalous structures taking place in the organs common to both,—that is, the organs of locomotion and sensation,—exercise, so long as they are confined to these, an influence still more limited. These inferences, which must be obvious to every one familiar with the comparative dynamic importance of the organs of the animal body, cost M. G. St-Hilaire a great deal of speculation and reasoning.

We may determine by a mode equally summary another question, which seems to him singularly difficult, viz. what condition of anomalous formation is most severe, most serious, or interferes most with the functions of the living body? Common sense will at once reply, the total suppression or extinction of organs; next to this, the suppression of some of their parts, that is, their imperfection or deficiency; next to this, the unnatural or faulty position of organs; in the next degree, the unnatural position of parts of organs; and, least of all, the faulty configuration of one or more of their parts, producing anatomical and dynamic disproportion, and thereby coming under the head of disease at last rather than monstrosity. He is much puzzled with the comparative inconvenience of organs forming preternatural connections with each other, or that of being detached where they ought to be united; nor is he less perplexed about the comparative evil of malposition of organs, and preternatural junctions or separations. All these inquiries are, in our opinion, in the present state of the science, both frivolous and premature; and it is surely enough to determine that they are injurious, without aiming at such extreme nicety in estimating their relative degrees of injury.

M. I. Geoffroy St-Hilaire next proceeds to consider the definition of the word *monster* given by authors; and after noticing those of Aristotle and Ambrose Paré, justly mentions that of Haller as the first correct one;—an aberration in the structure of an animal from the usual structure of its species, so conspicuous as to attract the attention of the ignorant. He might have remarked, that Lemery gave a definition which approaches as nearly as may be to the correct idea of a monster, when he applied this name to any *animal born with a conformation contrary to nature, or, in other words, with structure very different from the standard-type of its species.* * After the time of Haller, this denomination underwent some latitude; and Bonnet, rejecting the distinction between *variety* and *monstrosity* of organization, denominated as monstrous every form of organization, in which the shape, arrangement, and number of any of the parts, was not according to the established rules. In this system the author properly remarks, that it is a most serious objection that any human being, who presented the external forms, the facial angle, and the lineaments, which the sculptors of antiquity assigned to the statues of the divinities, and consequently, would approach what they had conceived to be the standard of physical perfection and human beauty, is at once by this definition placed among monsters. Nor is that of M. Andral less objectionable, since, by allowing every congenital alteration of nutrition to be monstrous, it follows, that every object which presents a conformation of organs different from that which belongs to its extra-uterine life, its species or sex, must be regarded as monstrous. Hence, an open *foramen ovale*, a testicle contained in the abdomen, and *spina bifida*, are all to be regarded as monstrous.

The signification of the term monstrosity was, however, made more limited by M. Chaussier and Adelon, who applied it not to all organic deviations, but to those only which are either malformed or defectively formed; and would consequently exclude the whole of the *heterotaxies*, and one-half at least of the *hemiteries*. With a view to the primary, or at least the material, cause of their formation, Blumenbach designates them as errors or mistakes of the formative *Nisus*,—a hypothetical idea, which implies in the propagating or conceiving animal, or its generative organs, the existence of a principle capable of guiding and directing the formation and growth of its offspring. That of Beclard, who termed a monster the permanent formation of what ought only to be transitory, though it refers, like the definition of Blumenbach, to the producing cause, is objectionable, nevertheless, in being too limited; and the same, we conceive, may be said of the definition given by M. Geoffroy St-Hilaire, who, indeed, considers a monster as merely a fœtus under the common conditions, but in which one or more of the organs have not participated in the successive transformations which constitute their organic character.

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* Mém. de l'Academie Royale des Sciences, 1738.

It is manifest that, according to these views, a person born with an open *foramen ovale*, a lobulated kidney, an open inguinal canal, an ununited state of the spinal splates or cranial bones, must be a monster; while another, in whom the brain is deficient, or the *humeri* and *femora* are wanting, is by no means to be referred to this category. To avoid all these objections, the present author shelters himself under the following safe but rather vague generality; that monsters are *deviations from the specific type, complex, very severe, vicious, apparent externally, and congenital.*

We shall not follow the author in his view of the different arrangements proposed by the writers who have successively undertaken to elucidate this complicated subject;—Liceti, Bonnet, Huber, Malacarne, Buffon, Voigtel, Blumenbach, Breschet, Charvet, and Otto. All these classifications are, according to the author, more or less objectionable; and he adheres to his own already given. He then proceeds to give a tabular view of the various anomalies which he refers to the first great division of *simple*, or that of the demi-monsters, or *hemiteries*; and the detailed enumeration of these occupies the whole of the present volume.

It would be in vain to attempt to give a circumstantial analysis of the minute, lengthened, and rather tedious, details into which the learned author has entered; but we shall take such a general view as will communicate some idea of the manner in which M. I. G. St-Hilaire treats the first division of his subject.

The whole tribe of *Simple Anomalies*, or *Hemiteries*, M. I. Geoffroy St-Hilaire divides into five general classes, according as they relate to I. volume; II. to shape or figure; III. to structure; IV. to disposition, or arrangement; and V. to number and existence.

The first class, or that of anomalies in volume, comprehends four orders, 1. those in which the volume of the whole body, or of all the organs, is diminished,—dwarfs, pigmies, &c.; 2. those in which the volume of the whole body, or of all the organs, is augmented,—giants and every form of extraordinary augmentation of the stature of the human body; 3. that in which the volume of one or more of the regions, or of one or more organs, is preternaturally diminished; for instance, unusually small head, unusually small chest, unusually small extremities, and atrophy of any of the organs; and 4. of those in which one or more of the regions, of the organs, or of the organic systems, is preternaturally augmented;—including all the hypertrophies, and such enlargements as excessive corpulence (*polysarcia.*) Under each of these heads the author gives short but interesting histories of individuals distinguished for dwarfish or gigantic stature, persons with large heads, and all the extraordinary instances of fat men and women who have figured in the memoirs of obesity,—not forgetting the adipose cushions of the interesting Bosjemans of Caffraria. In two things, however, he has been oblivious. We cannot discover by what oversight he has omitted the Spectator's Club of fat men, more especially when he joins with Buffon in accusing John Bull of such a singular tendency to adipescence; and we are equally at a loss to discover the reason why he has not availed himself of the ingenious Mr Wadd's amusing and instructive memoirs of obesity.

The second class, consisting of anomalies of form, occupies a much smaller share of attention; and, indeed, the author does not atempt to communicate any exact or definite ideas, of what should constitute anomalies of figure. Though they correspond literally, they differ in reality from the *Deformities* of the English and the Missbildungen of the Germans, in so far as they comprehend a much less extensive order of anomalies than either of these. M. Isidore G. St-Hilaire cannot make more than a single order, which he divides into two groups, according as the mis-shaping affects a whole region or is confined to a single organ. Of this kind are deformities of the head in men and animals, especially the remarkable one observed in the dog-headed carps of France, and which attracted so forcibly the attention of Rondelet, Gessner, and Aldrovandus, varieties in the figure of the stomach, and in the bones of the pelvis.

The third class, consisting of anomalies in structure or intimate composition, comprehends two great general heads,—anomalies in colour, and anomalies of structure properly so named.

To the head of the anomalies in colour, M. I. G. St Hilaire, refers *defect* of coloration or *albumen*, and gives a minute account of all its various forms, illustrated by several remarkable cases, excess of coloration or *melanism;* and simple change of colour, as *cyanosis* and *cirrosis*.

Under the second division, or the proper anomalies of structure, he arranges *softening* of organs naturally firm, induration of organs naturally soft, including all the examples of preterna-

tural ossifications of serous, fibrous, or fibro-cartilaginous organs. The author justly remarks, that these are almost invariably the effect of diseased action; and hence they belong more to the head of morbid anatomy than teratology.

The fourth class, that of anomalies in disposition or arrangement, comprehends a very extensive assemblage of deviations from the standard type, which are divided into the following five orders; 1*st*, Anomalies by change of position or displacement (*ectopiæ*;) 2*d*, Anomalies by change of connection (*paratopiæ*) 3*d*, Anomalies by continuity of parts usually separate, (*concretiones*;) 4*th*, Anomalies by partition, (*partitiones*;) and 5*th*, Anomalies by disunion of parts ordinarily conjoined, (*disjunctiones*.) The detailed history of the characters, causes, and physiological effects and influence of these different forms of anomalous disposition, is fully and minutely considered in an equal number of chapters, in the fourth book of the work.

The order in which the ingenious author treats of these anomalies is neither strictly anatomical, nor purely physiological, but of a mixed character. Commencing first with displacements of the splanchnic organs, he takes a successive view of those of the encephalo-rachidial cavity, (p. 349;) those of the chest, as the heart, lungs, &c. (p. 352-367;) those of the digestive viscera, (p. 367-378;) and finally, those of the genito-urinary organs, (378-395.) In a second section, devoted to the anomalies of the non-splanchnic organs, rather a vague character, he treats briefly of club-foot, spinal distortion, anomalous dispositions of the hair, teeth, &c.; at greater length and more minutely of the anomalies in the origin and distribution of the blood-vessels and nerves, and the connections of the muscles and ligaments; and the chapter is concluded with general observations on anomalies in position, primary or congenital, and secondary or acquired.

The second chapter of this book on *anomalies by change of connection*, which is lengthened and elaborate, consists of three sections on the following subjects:—1*st*, anomalies in articulation, 2*d*, anomalies of insertion, viz. unusual insertions of teeth, &c. extraordinary attachments of muscles and ligaments; 3*d*, anomalous and unusual divisions and ramifications of blood-vessels, preternatural obliterations of the blood-vessels, or of the excretory ducts of glands, or of the usual apertures of any of alimentary or generative canals; and finally, the anomalous existence of *cloaca* or duct, common to the rectum or vagina. In this survey of anomalous dispositions, the author gives a very comprehensive account of those anomalous divisions and distributions of vessels which have occupied the attention of so many recent anatomists. The subject is important, in so far as it involves the previous question of the standard division and distribution; —a point by no means hitherto determined.

In the third chapter, on preternatural unions of parts, the author considers the different imperforations, (*atresiæ*) or obliterations, and the preternatural union of remote viscera, viz. the conjunction of two kidneys, two *testes*, two ovaries, &c.

Anomalies by partition, which form the subject of the fourth chapter, are those in which hollow organs, such as the bladder, the womb, or the vagina, are divided into two or more chambers by a *septum* or partition more or less complete. From the short account of M. I. G. St-Hilaire, this anomaly appears to be confined chiefly, if not entirely, to the organs now mentioned. M. Charvet, however, to whom this subject is indebted for particular investigation, represents the portions of the alimentary canal to be also liable to it. The author adopts, to a certain extent, the explanation of this anomaly given by M. Serres, who ascribes it to the circumstance of all the organs being formed double, and the persistence of the mutual walls after the period of fœtal life, which, according to the theory, ought to be obliterated as developement proceeds.

The subject of preternatural disunions, which is treated in the fifth chapter, is a very extensive one, and consists of two general divisions,—*anomalies by perforation* and *anomalies by division*.

Under the first head, *anomalies by perforation*, we find discussed perforation of the diaphragm, persistence or presence rather of the *urachus*, persistence of the *ductus arteriosus*, of the *foramen ovale*, and perforation of the ventricular *septum* with their effects *(cyanosis,)* and perforation of the cheek, which is divided into three sections.

Under the second head, the author considers interruption of the splanchnic canals, lobulation of the spleen and kidneys, hare-lip, fissure of the iris, median fissure of the lips and palatine vault, fissure of the nose, fissure of the *scrotum*, and *urethra*, *(hypospadias,)* fissure of the *sternum* and the persistence of the separation of the spinal plates of the *vertebræ*.

The fifth and last class, which embraces the anomalies relative to the number, and consequently to the actual existence or absence of parts, forms a most extensive and varied assemblage, many of which approach much more closely to the class of genuine monstrosities than any of those previously considered. Here, indeed, we begin to recognize an approach to part of the ancient division into monsters by *defect*, and monsters by *excess*; a division, nevertheless, which the author justly remarks, cannot be defended on anatomical or philosophical principles.

With regard, for example, to the absolute want or disappearance of an organ, (*monstrum per defectum,*) he justly observes, that it occasionally happens, that, by careful and scrupulous dissection, traces more or less distinct may be found of its remains or rudiments; and conversely, when to an organ completed on the standard type supernumerary parts appear to be added, anatomical analysis may also prove that there is, strictly speaking, no appearance of new parts, but merely a considerable developement of parts, which commonly exist only in the rudimental form. In many cases also, the numerical diminution or increase of parts may be explained by the intimate junction or the complete division of two or more parts; and hence cases of this nature may be regarded as allied to the last class, or at most as forming the transition from the last to the present assemblage of anomalies. For all these reasons M. I. Geoffroy St-Hilaire scruples not to reject at once these relics of the ancient division,—monsters by defect and monsters by excess,—as vague and erroneous, and calculated to divert the mind from the true cause of the *hemitery*.

The author then proceeds to consider, in the first chapter of the book, those anomalies which consist in diminution or augmentation of the number of the parts of organs, and takes a view of these numerical anomalies in the osseous system, the muscular system, in the constituent parts of the internal organs, in the tubercles of the teeth and the antlers of the stag.

In the second chapter, which is devoted to the numerical diminution or increase of the organs, the author surveys in the following order the anatomical history and physiological causes of numerical increase or diminution of the teeth, the vertebræ, the ribs, the phalanges of the fingers and toes, and nails, *ectrodactylia*, or defect of fingers or toes, and *polydactylia*, or numerical excess of fingers and toes, diminution or excess of the number of the seminal vesicles, the testicles, the mammæ, alleged cases of deficiency or duplication of the heart, and other instances of deficiency or duplication of organs. In the examination of these different subjects, the author shows much extent of information, and adduces a great number of interesting facts.

Such is a short sketch of the subjects discussed in the present volume. The author has only completed one of his divisions; and if to do this he occupies a thick octavo of 740 pages, what will the other, which, on the same scale, must be about three-fourths, occupy? It is impossible to deny that he has shown great research in making himself intimately acquainted with all the facts of the subject; and the attention with which he has studied it, is displayed in the extensive collection of information. The reader, however, perceives a want of method and precision, and a fondness for introducing long illustrations, which, however interesting, are totally out of place. There is also throughout the volume too much speculation, and too little attention to brevity and precision in the arrangement of his general principles.

With all its faults, however, this work will justly claim the attention both of the professional and philosophical reader, to whom it cannot fail to be extremely useful in collecting, from so many different sources, so much accurate and varied information.

The doctrines and facts are illustrated by a series of lithographic engravings.

Art. II.—*Observations on the general Principles and on the particular Nature and Treatment of various Species of Inflammation.* By J. H. James, Surgeon to the Devon and Exeter Hospital, and Consulting-Surgeon to the Exeter Dispensary. 8vo, Pp. 565. London, 1832.

This work, which was originally a successful prize essay before the College of Surgeons, London, in the year 1818, was first published in the year 1821, and speedily claimed the attention of the profession as a short but useful and instructive compendium of the state of medical opinion on the pathology and treatment of the different forms of inflammation. Since that time it has slowly and gradually been getting into deserved esteem, if not very extensive notice; and the author, with laudable zeal, has, in publishing a new and more complete edition, made all those corrections, modifications, and extensions, which his own mature experience, and the progress of medical and surgical knowledge in the course of ten years, have enabled him to introduce.

In undertaking to give a full and instructive view of the facts and doctrines relating to the different kinds of inflammatory action, and their respective modes of treatment, it is easy to perceive that the great difficulty must be the selection of materials, and the concentration and condensation of the immense and multifarious collection of facts, arguments, and opinions with which the writings of medical and surgical authors at present abound. Between the time of John Hunter and M. Gendrin, Carmichael Smyth, and the late Dr Duncan, Mr Travers and Dr Lee, so much has been done to rectify and enlarge our views of the nature and varieties of inflammatory action, that the writer who proposes to give even a general view of the subject, and to place in their proper light each doctrine, pathological and practical, has a task complicated and tedious to perform, and one which demands the exercise of much taste and judgment.

In these respects Mr James must be admitted to have been highly successful. Without much, or indeed any, pretension to originality of views, which, indeed, the subject scarcely admitted, but with great good sense and perfect knowledge of his subject, he has produced a work which must be equally useful to the physician and to the surgeon,—to practitioners and to the student,—to him who has seen much, and to the individual whose observation has only begun to be tried. It is, indeed, no ordinary merit to concentrate in the judicious manner exemplified in the present volume, all the principles of pathology and treatment, on a morbid process so varied in its nature, effects, and consequences, as inflammation. With extensive and sufficiently minute literary knowledge of the subject, Mr James combines the results of his own experience and the instructions of his able preceptor, Mr Abernethy, and shows that on every topic he has performed the part of a faithful and judicious eclectic. A work so useful we admit that we should have noticed before this time. We embrace, therefore, the opportunity of the appearance of the present edition of it, in order to communicate some idea of the contents of the work as a medico-chirurgical treatise, and of its nature and merits as a didactic guide to the student and practitioner.

The work is divided into two parts:—the first on the Causes, Phenomena, and Modes of inflammation; and the second on the Particular Nature and Treatment of various Species of Inflammation. Each part is further subdivided into chapters and minor heads, devoted to the discussion of particular branches of the general subject.

The first chapter, after some preliminary observations, commences with remarks on the Physiology of the Circulation, as necessary to understanding the subsequent details. Mr James remarks, that, with regard to the functions of the nerves, so little has hitherto been ascertained, that no inference can be drawn from this source to explain the effects of inflammation, though pain is one of the most prominent symptoms. Even though the blood-vessels are materially concerned in producing inflammation, their healthy functions are so imperfectly known, that no precise notions of their deranged action can be formed. For instance, some assert, that at each pulsation the arteries are dilated, while others maintain the reverse; but Mr James observes, that these last formed their opinions exclusively on experiments, which may be wrongly interpreted. An artery divested of its natural coverings, and exposed to the direct influence of the atmosphere, will not dilate under the systole of the heart, although if pressed on that impulse is felt. We feel, says he, in violent exercise the blood in the carotids striking at each systole against the sides of the bony canal, and the blood in the digital arteries beating against the sides of a ring on our finger, indicating the dilatation of these vessels under impulse. In point of fact, unless the coats of the artery be exposed or irritated, dilatation will always be forced to take place, and this expansion is rendered evident by the rise and fall of the integuments at the pulsations. Mr James thus follows Mr John Hunter in his opinion of the lateral elasticity of the arteries, and the purpose for which this elasticity is given. According to that eminent physiologist, the blood first moves by the direct impulsion of the ventricle, and afterwards by the elastic recoil of the dilated arteries, and thus it happens that, by these consecutive impulses, the flow of blood is equalized in the smaller vessels till it becomes an uniform current.

The doctrine, that the arteries themselves exercise a direct power of impulsion in the blood they contain, by their muscular action, is next examined. The muscular power of arteries Mr James considers as undeniable, but given for another purpose, namely, to regulate the calibre of the vessels. Their elastic power would be inadequate to this; but, as the case of exposure proves, they can hold themselves immoveable against the impulse of the heart; they close to prevent hemorrhage; and they enlarge or diminish their calibre, according to the demand of the parts under circumstances perpetually varying. Mr James also infers, that the muscular power of the arteries cannot be employed in propelling the blood, for this reason, viz. "That it is clear either that the contraction must take place simultaneously with the heart, in which case they would admit no blood;—or alternately with it, when the effect would be to perpetuate the pulsation through the most minute vessels, which is contrary to fact, although the muscular power of the arteries is greatest in the smaller branches."

The power of the capillary vessels to move and propel the blood is now generally recognized; but to what extent they contribute to return the blood to the heart has not been ascertained. Among the numerous causes that have been assigned for the return of the venous blood, independent of the action of the capillaries and of the *vis a tergo* of the heart, such as the greater size of the veins, the existence of valves, the lateral pressure of arterial pulsation, and muscular action, Mr James is of opinion that they scarcely merit a serious refutation, as no power can arise from the two first,—the third is negative, acting equally in both directions,—and the last is only occasional.

In the suction power of the heart itself, supported by the experiments and arguments of Dr Barry, Mr James does not fully acquiesce, for the following reasons: 1. If the return of the venous blood be owing to this suction power, then the greatest power would be provided where the greatest force was required; and as the greatest force is necessary to return the blood to the right side, the cavities on that side should not be weaker than the left; "for supposing it to be a part of the duty of each cavity to propel, and a part to suck the blood towards it, each duty of equal importance; then as much of the right cavities are exonerated on the score of impulse, from the shortness of the arterial circulation to the lungs, so much would be additionally required of them beyond the left cavities, on account of the much greater length and difficulty of the systemic venous circulation, through which, according to this hypothesis, they would have to suck it."—2. If the power of suction were in proportion to the strength provided, the left cavities would be found sucking with enormous force in comparison to the right, which would be little able to provide for such a demand, and the pulmonary system would be prematurely emptied. These objections are unquestionably important; and the subject would require to be again investigated with due attention to the fallacies now specified.

The author next proceeds to an examination of the phenomena which are observed in the vessels of an inflamed part, as they have been observed in the tissues of animals subjected to experiment. The parts selected for this purpose have been chiefly the mesentery of hot-blooded animals, or the transparent web of the frog's foot; and the inflammation has been produced by mechanical irritation, cauteries, and strong stimuli. According to Hastings and others, on the application of the irritating substance, the capillaries contract, and the circulation is accelerated towards the stimulated point. They then become dilated—the motion in the vessels is lessened, becomes oscillatory, and in some cases is stopped altogether, the globules showing a disposition to coalesce. Gendrin, however, states, that while in the centre there is cessation of motion, round this centre the blood still moves, though more slowly than natural, and at a still farther distance the current runs with more than ordinary speed. It must be observed, in connection with these experiments, that there is reason to believe the capillary circulation is regulated by circumstances independent of the direct influence of the heart; and that the changes in the colour of the part are not mentioned, as not applying to inflammation generally, but only to certain of its stages.

Dr Hastings and others drew the conclusion from these experiments, that debility of the capillaries is the cause of inflammation; and that while the application of stimuli increases the action of the vessels, none of the symptoms of inflammation are produced. "When, however, (says he) the excessive application of these stimuli has impaired the excitability of the small vessels, the phenomena are fully manifested, and when their excitability is restored the inflammation subsides. It may be logically inferred, therefore, that inflammation consists in a weakened action of the capillaries, by which the equilibrium between the larger and smaller vessels is destroyed, and the latter become distended."

On the other hand, Mr James doubts the accuracy of the conclusions drawn by Dr Hastings. Granting that there is a dilated state of the vessels, and a retardation of the motion of the blood towards the centre, or even complete stagnation, yet it appears that the circulation is accelerated towards the circumference; the larger arteries leading to the inflamed part are fuller, and insignificant arteries enlarge; when divided they bleed much more copiously and longer; and a larger volume of blood returns through the veins from the part affected, as Mr Lawrence has proved. Besides, if an inflamed part be pressed by the finger, so that the blood is excluded from the vessels, on the removal of the pressure it returns with great velocity; while in parts reddened and turgid from cold the contrary will be the case. In the latter, says Mr James, we can have no difficulty in supposing that the circulation is languid. Is it not therefore a legitimate inference that in the former it is not? To these may be added the facts, that bandages after an injury become tight; that the rapid union of divided vessels and the developement of new ones are quite inconsistent with the supposition of debility; and that the analogous phenomena of the temporary enlargement of vessels in blushing, in the erectile tissues, and in lactation, are completely hostile to the idea of debility.

From other considerations—from the effects of remedies which at an early stage would increase inflammation, reducing that inflammation at a subsequent stage—Mr James concludes, that "inflammation differs essentially in its nature, and that no one exclusive condition of vessels produces it; and if we regard the differences in appearance, in product, in intensity, and in duration, which are so common and so undeniable, we shall have further reason for concluding, that it does not depend upon any one cause, such as the debility of vessels, or the want of equilibrium of power between the capillaries and the large arteries."

The opposite states of inflammation, as to heat and colour, imply a difference in the state of the vessels. In some cases the heat is augmented, and the colour is arterial; in others the temperature is low, and the colour venous. In the one case, the circulation is accelerated, in the other it is retarded. In all, however, there is, Mr James conceives, an increased action of the part, even when its powers are weak, though it may be impossible to specify in what it consists.

Mr James next treats in a separate section of the Local Symptoms of Inflammation. These are redness, heat, swelling, and pain varying much in degree and kind. *Redness* is an universal symptom, arising from a larger quantity of blood and of red globules being contained in the vessels of a part. This state is termed *congestion.* The heat of an inflamed part is accounted for on the supposition, that the actions of the part are increased, whether of its nervous or vascular system, or both. The sensation of heat seems often to be increased beyond what the actual heat would indicate, and is remarkably felt in gangrene where the nerves are undergoing destruction. A burning sensation is often experienced where the part is actually cold. The feeling of pain, he presumes, can only arise from some altered state of the nerves; but the degree and kind of pain is varied according to the locality of the injured part. The swelling is found to arise partly from the vessels being more distended with blood, and partly from matters separated from it into the cells of the cellular membrane, namely, lymph, serum, or other substances; and the throbbing has been accounted for on the supposition of the inflammation being in the neighbourhood of an artery, though instances occur where this symptom is not perceived.

The next three sections are devoted to the consideration of Local and General Sympathy and Sympathetic Fever. The body consisting of an assemblage of organs, the functions of which are each more or less essential to the healthy action of the whole, any affection of an individual part is more or less felt by the whole; and, on the contrary, a reciprocal influence is exerted by the sound on the diseased parts. A more particular community of feeling exists also between parts whose functions are especially connected. This community of feeling is denominated *sympathy.*

By *local sympathy*, when a part is injured, an attempt is made to repair it by the effusion of coagulable lympth, and the conversion of this into animal structure; and an increased flow of blood to the part takes place, accompanied by the phenomena of increased heat and sensibility. If the injury is considerable the heart itself increases its efforts to send blood, while in many other parts of the body the vessels and nerves diminish their action, in order that a greater supply of the nutritive fluid, and the chief exertion of vital energy, may be concentrated where the new process is going on. The phenomena which occur locally, says Mr James, constitute inflammation—those in the system *sympathetic fever.*

Though there is a tendency in inflammation to spread around the place in which it originates, it nevertheless does not do so equally in every direction. The tissue in which it originates claims a sympathetic preference, modified, however, by particular circumstances. 1. The liability of the surface to impressions. In illustration of this Mr James notices, that the internal membranes have a much greater tendency to inflame throughout than the conjunctiva or urethra, which are constantly exposed to irritating impressions. 2. Different parts of the same surface in some instances possess different vital properties. Thus different portions of the alimentary canal perform different functions; form different secretions, evolve different gases, are inhabited by different worms, and infested by different diseases; and this operates as a powerful cause in checking sympathetic action. 3. The disposition to spread seems gradually lost on surfaces, becoming evanescent, like a ripple on a pool. And lastly, if lymph is effused and organized, it interrupts the continuity of surface, and becomes a barrier against further inflammatory action.

When occurring in organs, in contradistinction to surfaces, inflammation extends itself more readily through the original organ than the adjacent parts, protected as they are by an envelope of cellular membrane. Its progress, however, through solid organs is, as might be supposed, less rapid than on surfaces.

Such are Mr James's ideas of the sympathetic impression communicated by an inflamed part to neighbouring or distant parts. When the symptoms are confined to pain, heat, swelling, &c. not far distant from the part affected, and not so severe as materially to affect the healthy functions, the sympathetic affection is limited and local. But when so severe as to disturb the natural functions of the digestive and secretory organs, to increase the circulation of the vital fluid, and generate universal heat of surface, then the disease, from being local, becomes general, and is termed Sympathetic Fever.

The type of sympathetic often approaches to that of idiopathic fever. The congestive state of fever, in which reaction has not taken place, has been compared with the state immediately consequent on severe injury; but in the former, says Mr James, the system is labouring under a cause *which has vitiated the blood* and impaired the nervous energy. If the injured part is removed, or the injury repaired, the system recovers itself. A patient sinking under a fatal gun-shot wound will often possess all his intellectual faculties unimpaired to the last, while the nervous system of the plague or fever patient is equally incapable of intellectual or physical effort. "This," says Mr James, "denotes important differences in the state of the *nervous* system; and who will say that the poisoned mass of blood in the plague patient does not also widely differ from the healthy fluids of a wounded soldier."

Mr James goes on to state, that inflammation may supervene in idiopathic fevers, as occasionally happens in common continued fever, and invariably in small-pox; but inflammation is not the pre-existing state upon which the fever depends, for the fever exists in all its violence before it appears on the surface.

The next section is devoted to some remarks on Irritation and Irritability. To the term *irritation*, as a substitute for inflammation, Mr James decidedly objects. Irritability may be used to denote a state of the system in which it is disposed to sympathize in a more than ordinary degree; and the term irritation to signify the state of a part to which any injurious cause is applied.

The second chapter treats of the causes affecting the system generally, which influence the progress of, or predispose to, inflammation. These Mr James considers minutely under the heads of nervous system,—state of the digestive organs,—impure state of the blood,—plethora,—general inflammatory disposition,—state of the part,—temperament, hereditary disposition, &c.—age, sex, habits,—air, temperature, and climate. Into these details our space does not permit us to follow the author. Some of these heads might in truth be classed under one term, as holding strict dependence on, if not originating from, derangement of the secreting and digestive organs. An impure state of the blood, though invariably connected with disorder of the digestive organs, is, however, not to be solely attributed to that cause; for there are persons in whom every scratch festers into a sore, as in scurvy or scrofula; and in many cases a change of atmosphere alone will change the tendency to morbid action. From this and other considerations, Mr James professes himself to be, to a certain extent, a humoralist.

The third chapter,—on the processes and products of inflammation,—need not detain us long. Mr James considers the process 1. of Adhesive Inflammation, the result of which is the organization of the deposited fibrine. In this case, it is found that vessels pass into the fibrine or organizable lymph from the surrounding parts. 2. Suppurative Inflammation, so termed when the centre of the inflamed part contains pus. How this matter is formed has not been clearly demonstrated. In cases of wounds which do not unite by simple adhesion, the suppurating process is accessory to another,—that of granulation; and when two granulating surfaces are kept in contact they unite by adhesion, the flow of pus ceases, cicatrization and scabbing take place, and the breach is repaired. 3. Ulcerative Inflammation, the reverse of the adhesive, and essentially consisting in the removal of a part. 4. Mortification, sphacelus, or death of the part, in which the fluids are found more or less coagulated, the solids changed in their texture, and the functions of the nerves and blood-vessels abolished. The term *gangrene* only implies that state which precedes, and commonly, though not inevitably, terminates in mortification. For the details connected with these different consequences or states of inflammation, we refer to the work itself.

The fifth section is devoted to the consideration of "the purposes and uses of these different modes of Inflammation;" and the other divisions of this chapter are,—on resolving inflammation,—on metastasis, counter-irritation, derivation, revulsion, hemorrhage,—on injury of function, disorganization,—and on inflammation considered as acute, sub-acute, or chronic, sthenic or asthenic, active or passive. The inflammatory affection is the commencement of a process by which parts divided, injured, or destroyed, are repaired. In every organ capable of effusing lymph and requiring protection, the adhesive process takes place. The suppurative process is established in cases of injury so severe that adhesion is impossible, without a new production or extension of the parts; and ulceration and mortification remove parts rendered from any cause unfitted for their purposes.

The resolution of inflammation, or the return of the parts to their natural state, Mr James considers not only as the disposition more or less of all inflammations, but as the particular tendency of a particular class. When resolution takes place with unusual rapidity in one place, and inflammatory action appears in another, this phenomenon is termed *Metastasis.* "Those inflammations which have the least tendency to produce fibrinous effusion," Mr James remarks, "commonly have the greatest disposition to quit the part and attack another; thus it is with rubeola, *erysipelas superficiale,* &c. but this is not invariably the case, for nothing is less probable than the metastasis of scarlatina, as we know by the modes of treatment commonly employed."

The subject of metastasis naturally leads to the consideration of another point, namely, the power of artificially substituting one disease from another; for we practically find, that one of the most potent means we possess, consists in establishing a new disease, whereby the other is lessened or removed, by diverting, in fact, the morbid action to the new part.

"Two principles seem deserving attention with respect to this point; one is, that the new disease be established at such a distance as not to extend its sphere of irritation to the old ones, which will then be augmented by it; the other is, to establish a new disease, approaching as far as may be to the probable nature of the old one. Thus, when we wish to remove inflammation which has not proceeded to the effusion of lymph or pus, we should excite simple inflammation, as by a mustard poultice or blister; if it has advanced to secretion from a surface, as in an inflamed joint, a blister will be the appropriate remedy; but if we have to contend with a suppuration or ulcer, then a seton or issue, being of the same kind, will be more likely to cause such a disease as will divert the other."—P. 151.

The fourth chapter, *on Remedial Means*, concludes the first part of the work. Of these, bleeding, general and local, occupies the first place; next are those medicines which are supposed to possess a direct anti-inflammatory power, as tartrate of antimony, mercury, and opium; thirdly, those medicines which are supposed to lessen the sympathetic tendency, as the narcotics; and fourthly, medicines which act by restoring the proper functions and secretions, as purgatives. To these are to be added the removal of all causes of irritation, such as excitement or exertion of mind,—much light, or disturbing sounds,—too great a degree of warmth, or, on the other hand, undue exposure to cold.

The Second Part of the work treates of "the Particular Nature and Treatment of various species of Inflammation," arranged into, 1. Inflammations produced by *external injuries*; and 2. Inflammation arising from *internal causes*. The first division is arranged into inflammations from mechanical injury, as incised and lacerated wounds,—contusions and sprains in different organs or tissues, as integuments, muscles, bones, &c. and compound fractures. *Chemical injuries* embrace inflammation from excess of temperature,—burns and scalds,—cold,—frost-bite,—chilblains,—inflammation from poisons, animal, vegetable, and mineral.

The inflammations arising from *internal causes*, forming the second great division, are classed into *limited* and *spreading* inflammations, and further arranged into orders, genera, and species.

On the inflammations produced by mechanical injury it is not necessary to dwell long. In incised wounds the parts are so divided, and the breach of continuity so small, that the vessels and nerves are ready to execute the processes by which union is affected, and scarcely any sympathetic action is excited. When the injury is more severe, and inflammation spreads, the pulse becomes hard, frequent, and full,—the skin dry and hot, and the secretions scanty and depraved. The respiration is accelerated, thirst intense, and disinclination to food; the tongue, white at first, then brownish, becomes dry throughout or in the middle; and there is pain in the head and spinal column. If the inflammation is subdued, all these symptoms gradually subside; if not, sympathetic fever follows. This fever assumes the hectic form if the suppuration be profuse; irritative, if the suppuration is not copious and the matter pent up, or cannot discharge itself with freedom.

Lacerated or contused wounds, from the tissues being more or less disorganized by the violence, are less certain of a speedy and satisfactory result. Adhesion takes place imperfectly; suppuration comes on; and in many cases sphacelus; and the inflammation often spreads to parts hitherto sound. When bones or joints are implicated, the difficulty of repair is greater. The sympathetic affection is ushered in by loss of muscular power and syncope; and when the patient recovers, the pulse is small and feeble; the extremities cold; and the stomach often rejects its contents. This is the state of collapse called by Mr Travers prostration without reaction; besides which, delirium, coma, convulsions, or tetanus, often follow such injuries. In simple contusions, the process of reparation consists in the absorption of the effused blood or serum.

Chemical injuries, such as burns and scalds, are best treated by stimulating medicines, and protecting the parts from the influence of the air.

The second division of this part of the work, on Inflammation arising from Internal Causes, falls now to be considered. These are divided into two classes, viz. *limited* and *spreading* inflammations, from an idea that there is in all spontaneous inflammations an original disposition either to be circumscribed or to spread. Though every tissue in which inflammatory action takes place has properties which influence its progress, and though some tissues are more liable to particular modes of inflammation, Mr James is of opinion, that different kinds of inflammation are liable to occur in the same tissue; that the same kind of inflammation is met with in different tissues; and that the same inflammation may even be transferred from one tissue to another.

The fifth order of the class of Limited Inflammations is,—inflammation of vital organs, arranged under the heads of, 1. External injury—2. Changes of temperature—3. Suppression of some disease or wonted discharge; repulsion of eruptions, or some specified diathesis, as gout, rheumatism, &c.—4. The introduction of some morbid poison, as of typhus, measles, &c.—5. The mechanical irritation of some other disease, as of tubercles, calculus, &c. With the same minuteness Mr James considers the other two orders of limited inflammation, viz. inflammation of parts of great but not vital importance, and inflammation of parts of secondary importance; but into his details it would be impossible to enter in the limited space appropriated for this notice. We, therefore, pass on to the second class, or *spreading inflammations*, which Mr James has arranged into genera and species.

Spreading inflammations are supposed to have this tendency, from a failure of the adhesive process, or from an unhealthy state of the general system. This state is, says Mr James, marked by "deficiency of nervous energy, owing to error in the digestive organs, or the result of intemperate habits, the influence of some morbid poison, or morbid air; or the united effects of several of these."

> "Let these inflammations be situate where they will, when they produce effusion, this is either of a serous nature, whether it be merely dark and unhealthy serum alone, or mixed with flocculi of lymph; or of pus, thin, sanious, brown or green, but always of an unhealthy character; and they are much disposed to occasion sphacelus. If they affect the skin, it has a strong disposition to separate in vesicles or phlyctenæ; if the cellular membrane, to slough; if serous membranes, to pour out turbid dark serum mixed with lymph; if mucous membranes, in many cases to ulcerate or slough." P. 347.

Spreading inflammations are either internal or external; the first affecting vital organs, and commonly the result of some febrile infection or constitutional disorder. The vascular excitement in inflammatory affections of this nature is often so small, and the pain so trifling, (as in typhus), that its degree gives no adequate idea of the mischief which exists.

External spreading inflammations have each their own peculiar mode of termination. Some species suppurate, others ulcerate; but the greater number simply effuse, either upon or under the cuticle a morbid secretion, or terminate in exfoliation. Cutaneous inflammations in general proceed from or are connected with constitutional disorder; and while some species occur but once, others have a disposition to recur at regular intervals. Most of them, however, whether chronic or acute, have periods of augmentation or decline, and having run their course finally disappear.

Of the third genus, or those inflammations which have a disposition to resolve, or to suppurate and slough, the first species, Erysipelas, is treated at considerable length. Then follows an account of that peculiar form of inflammation, first pointed out by the late Dr Duncan, under the character of Diffuse Inflammation of cellular membrane. In the most alarming variety, that originating from puncture in dissection, the affection follows, according to Duncan, "the usual progress of inoculated diseases. First, a pustule or vesicle takes place at the part to which the poison is applied; then there is high constitutional disturbance, corresponding to the fever of exanthematous diseases, followed by severe diffuse inflammation in *some* part of the cellular tissue, rapidly extending in all directions, but not continuous with the primary local pustule, which often gives little uneasiness, and generally heals quickly." Mr James supposes that the absorbents convey the poison from the point of injury to the axilla, although the channel of communication be not evident. From the axilla the inflammation spreads extensively to the trunk, and exerts a powerful influence on the constitution. The symptoms when the general system is affected, are depression and extreme anxiety,—the countenance becomes dejected and haggard, and in the worst cases yellow; vomiting takes place, followed by rigors, restlessness, tremors, and delirium. Various local remedies have been recommended for this affection, but these measures are by no means certain. Leeches, hot fomentations, poultices, spirituous applications, turpentine, opiate liniments, &c. bandaging and caustic, but there is none from which so much good has been actually derived as from incisions. The general treatment consists in bleeding and antiphlogistic remedies.

The fourth genus, *Phagedæna*, is characterized by the disposition to ulcerate and slough; and the fifth and concluding genus is discriminated as having a predominating tendency to mortification from various causes. Into the details of these we cannot severally enter. But we recommend the chapter on this subject, and that on mortification, from alleged or supposed disease of arteries, as giving excellent rational and practical views of the nature of these morbid states, and the best mode of managing them to prevent serious mischief, which is all that the practitioner can in the majority of cases expect to accomplish.

ART. III.—*Nouveaux Elemens de Medecine Operatoire, &c. New Elements of Surgery, with an Atlas of* 20 *4to plates, representing the principal Operations, and many Surgical Instruments.* By ALF. A. L. M. VELPEAU, Surgeon to the Hospital of La Pitié, Professor of Obstetrics, Anatomy, and Surgical Pathology, and Surgery, &c. &c. Three volumes 8vo. Paris and London, J. B. Bailliere, 1832.

THOUGH no one can deny the eminence of the British as rational and practical surgeons, it is a remarkable fact, that in their general treatises on surgery they are much inferior to their continental brethren. From the days of Gale, Clowes, Reid, Woodall, Wiseman, and more recently from those of Cheselden, Sharp, Pott, and Bromfield, to those of Sir E. Home, Sir A. Cooper, Messrs Brodie, Travers, and Lawrence, no class of men have distinguished themselves so much by their essays and treatises in particular departments of surgery; and the most unequivocal proof of the merit of these monographies is the fact, that at the present moment the writings of Sharp, Pott, Bromfield, and Wilmer, continue to be studied with as much interest as ever; while the writings of Sir A. Cooper, Brodie, Travers, and Lawrence, are not only perused by their countrymen, but have been translated into the leading learned languages of Europe. Yet amidst this wealth of essays on the pathology and treatment of different surgical diseases, what a penury do we behold of good and comprehensive general treatises. With the exception of Samuel Cooper's First Lines, Allan's System, and the excellent Lectures of Sir Astley Cooper, as published by Mr Tyrrell, the English surgeon does not possess at this moment any complete treatise deserving the name, and none to be compared with those of the foreign surgeons. The first of these works presents, on the whole, a good general view of the present state of surgical pathology and practice; the second is party-coloured, wants uniformity, and is unprofitably prolix on some subjects, and too meagre on others; the third, which is excellent as a view of the practical doctrines of the author, is limited on some points, probably from the nature of its publication as a course of lectures; but, it is to be regretted, that it is out of print, and can nowhere almost be procured in a complete form.

On the Continent we behold a very different order of things. We find the learned and precise system of Callisen in Denmark passing through several editions, and very generally received as a useful manual. In Germany the Manual of Cornelius de Solingen, the System of Munniks, and the Treatise of Purmann were succeeded by the Institutions of Heister and the Elements of A. G. Richter, which appear to have occupied their ground till they were supplanted to a certain extent, first by the voluminous Chirurgical Dictionary of A. T. Richter,[*] by the System of Arnemann, (1802,) then by the New Dictionary of J. C. M. Langenbeck,[†] and lastly, by a more recent work of the same author,[‡] the valuable Nosology and Therapeutics of Chirurgical Diseases. Of a still larger and more complete work on the principles and practice of surgery, by Rust, ten volumes are already published; besides several manuals by different individuals.* The Germans, however, it must be confessed, are more celebrated for their systematic treatises on medicine than for those on surgery; and they have hitherto shown more partiality to translations from the principal treatises of France, than to the composition of original works.

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[*] Chirurgischen Bibliothek, von A. T. Richter.

[†] Neue Bibliothek fuer die Chirurgie, i. T. Goettingen, 1817.

[‡] Nosologie und Therapie der Chirurgischen Krankheiten in Verbindung mit der Beschreibung der Operationem. Gottingen, 1825. 3 vols. 8vo.

Italy may boast the possession of four treatises on surgical pathology and therapeutics, which, overlooking numerous minor elementary works, reflect the highest honour on her surgical teachers. The works of Bertrandi and Nessi, both published in 1786, continued long to be prized both by their countrymen and by foreigners; and those of Assalini and Monteggia have proved themselves worthy successors. The Institutions of the latter form, perhaps, one of the most complete systems of principles and practice in surgical diseases extant in any language; and no single work has yet been published in England which can be compared with it.

It is in France, however, that we recognise the great number as well as the valuable character of systems of surgery. The eminence of the anatomists and surgeons of the French school in the reign of Charles IX. and Henry IV. early conferred on this country a character for surgical celebrity which she has retained for two centuries and a half. The French surgeons have always been distinguished for the comprehensiveness of their treatises, which in general contain information on every point which the student requires. When the works of Paré and Guillemeau became obsolete, they were succeeded by the treatise of Dionis, admirable equally for its method, its learning, its precision, and its good sense, and which, after passing through three large editions, was republished in 1740 with notes by De La Faye, again in 1751 and 1765, was translated by Heister into German, and anonymously in 1710 and 1733 into English, and about the same time into Flemish, and continued for forty years to be the guide of the French surgical practitioners. Then came the treatise of De La Motte, (1722,) which, after passing through two editions, was thought still sufficiently good to deserve republication with notes and corrections by Sabatier in 1771, those of Ledran, (1741,) of Garengeot, (1748,) and J. L. Petit, (1783,) good for the periods at which they appeared, and by no means void of interest even at present. The *Medecine Operatoire* of Lassus (1795,) and that of Sabatier (1796,) gave surgery and its operations a new aspect; and to the example of the latter able anatomist, perhaps we may trace the numbers and merits of the subsequent treatises by French surgeons. Even the lectures of Dessault, though incomplete, were, as published by

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* Theoretish-Practisch Handbuch der Chirurgie mit einschluss der syphilitischen und Augenkrankheiten in Alphabetishen Ordnung. Berlin, 1830. 15 vols.

Bichat (1801,) an exceedingly valuable body of surgical instruction. The Surgical Nosography of Richerand, first published in 1806, was useful in giving a systematic view of the diseases requiring surgical treatment; and its convenience as an elementary work was demonstrated by passing, in the course of fifteen years, through five editions. The treatise of Lassus on Surgical Pathology, and that of Pelletan on Clinical Surgery (1810,) also show the enterprise of the Parisian surgeons. At a more recent period came the *Medecine Operatoire* of M. Roux (1813,) the treatise of M. Delpech (1816,) the enlarged editions of the Surgical Nosography of Richerand (1816 and 1821,) and the elaborate and voluminous work of Boyer (1818 and 1824,) each distinguished respectively by several recommendatory qualities. At the date at which these systematic works appeared, we had scarcely a single treatise which in the smallest qualities could stand comparison with them. In this enumeration we omit a multitude of elementary works and manuals by Dutertre, Capuron, Begin, Tavernier, Coster, and Leblanc, all useful compendiums, though inferior to the more comprehensive works now mentioned.

These observations are made, not with the view of depreciating the talents and attainments of British surgeons, of which we conceive none can form a more just estimate, or entertain a higher opinion, but with the view of exciting an honourable emulation to produce some work which, in extent of plan, clearness of arrangement, and fulness of details, may, as a didactic treatise, be equally creditable to the character of British surgeons, as the treatises now mentioned are to the French.

These observations, though applicable at all times, could never be illustrated in a manner more clear and forcible than at the present moment, when, notwithstanding the great number of works of merit, another is yet added to the list. If the surgical treatises of France are so excellent, it may be asked what occasion is there for one more? The question is *a propos;* and the author is prepared with his answer. The treatise which M. Roux commenced in 1813 has not been finished. The inimitable treatise of Sabatier, he observes, though improved and brought to the level of recent times by the labours of Sanson and Begin, is in the same condition,—in addition to the fact, that, by his original plan, the author himself, who was particularly solicitous about the diagnostic signs and the symptomatology of surgical diseases, must be allowed to have sacrificed the operative details to the pathological principles of his treatise. The object of M. Richerand, he thinks, was rather to give concise ideas of the different departments of surgery as a science and art; while, on the contrary, in the voluminous work of M.

Boyer, too prolix certainly for the student, though every subject then known is fully discussed, several operative methods were omitted, of which it would be criminal for the surgeon to be ignorant.

It is, however, idle to defend the publication of a new treatise on surgery on these often repeated pretences. Let it be admitted at once that surgery is an art, constantly in progress, and annually undergoing changes, additions, improvements, and simplifications. It is not the new operation, or any number of new operations, which alone can justify the publication of a new work. The new and more accurate views of the pathology of local diseases, the questions whether some of these diseases may not be treated without operation, and the modification of operations, all concur to render the work which was useful five years ago less so at the present time, and much less so five years after this. It may happen also that the author, who follows many good writers, may, by a peculiar felicity of judgment, and a happy talent of combination, concentrate in one work all the good points and qualities of those who preceded them, and, by placing before the eyes of his reader the collective experience of his ablest predecessors and contemporaries, without bias or prejudice, but not without well-founded preference and decision, show him in a narrow compass truths, theoretical and practical, which could only be obtained by extensive reading, frequent consultation, and repeated reflection.

If the work of M. Velpeau does not perfectly realize this ideal standard of a good system of chirurgical knowledge, it must be admitted that it makes a very near approach to it. Intimately acquainted with the past and the present state of surgery, conversant also with all the general treatises and surgical writings in his own country, in Germany, in Italy, in the United States, and in England, and familiar with the anatomical and pathological principles of surgical diseases and their appropriate means of cure, whether by treatment or manual operation, M. Velpeau has produced a work which unites in a very high degree of perfection all the necessary ingredients of a good didactic treatise. The history, treatment, and operations of every disease, he delivers with the clear and intelligent air of one perfectly acquainted with the subject; and the literary history of the different opinions entertained at different periods, and the progressive steps by which the pathology and treatment of each disease have been improved during the lapse of a century and a half, he discusses with that degree of candour and judgment which proceed only from complete knowledge of the subject. At the same time there is little or nothing that can be wanted,—no extraneous matter, no loose declamation or vague criticism; but all is condensed, precise, and made to bear on the main ob-

ject,—the establishment of correct pathological principles and therapeutic rules in surgery, and the instruction of the surgical student and junior practitioner.

The work consists of three closely printed octavo volumes, the first of nearly 800 pages, the second of 500, and the third of a few more than 500. Originally, it appears to have been the intention of the author to confine it to two volumes; for the pages of the third are continuous with those of the second; but as this would have made the second 1000 pages, by the introduction of a title-page at the 503, he has divided this bulky volume into two nearly equal halves.

The whole work consists of three general divisions;—that of Elementary Operations, Complex Operations, and Special Operations.

Under the first head M. Velpeau gives in the first chapter a series of general observations, *first*, on cutting instruments, especially that most useful of all, the sharp bistoury; *secondly*, on the different sorts of incisions required for different purposes; and *thirdly*, on punctures. In the second chapter, on reunion and its means, he enumerates and describes the different forms of suture in use among surgeons.

The second division of the work, on complex operations, is divided into four general heads or titles, the first embracing the operations practised on the blood-vessels; the second, the different sorts of amputation; the third, the resection or excision of bones, and their articular extremities; and the fourth, the operation of trepan, or cutting through the bony walls of the cavities.

The first head or title, on the operations required for the diseases of blood-vessels, consists of four chapters; the first on aneurism generally, and the general principles of curing aneurismal arteries; the second, on the operations of particular arteries, and the modifications demanded by the peculiarities of each blood-vessel; the third chapter on *nævi materni* and erectile tumours, and the mode of curing them; and the fourth, on *varices*, and other diseased states of the venous tubes requiring operation.

The head or title on amputations consists only of two chapters;—the first devoted to amputations in general, the circumstances and states of limbs which render it necessary, the preliminary precautions, and, lastly, the different modes of operating, and the subsequent treatment; while in the second chapter the author takes a minute and detailed view of the different modes of amputation required for particular members, the disarticulating amputations, and, lastly, the disarticular removal of the thigh.

In the third title, devoted to resection, or excision of bones, M. Velpeau considers, in the *first* place, the circumstances which require removal of portions, more or less considerable, of the *diaphyses*, or bodies of bones, as the ribs, the sternum, and the lower-jaw, and the mode and means of removal; and, *secondly*, those cases which require the excision of the articular extremities, either of the thoracic or abdominal members.

The fourth title or head is subdivided into two chapters:—the first devoted to the subject of trepanning the cranium, the consideration of the cases in which it is required, and the best mode of operating; and the second on the cases requiring perforation of the bones of the chest, pelvis, and extremities.

The consideration of these subjects occupies about three-fourths of the first volume.

The third great division of the work, or that on special operations, that is to say, operations rendered necessary by the anatomical local position of certain organs affected by disease, is by far the most extensive and considerable part. The arrangement observed is the old one of diseases of the head and face under one head or title, and the neck, chest, abdomen, and *pelvis*, under another.

The first title is subdivided into two chapters;—a short one devoted to the operations required on the head, and a much longer one on those required to be performed on the face, and on the several facial organs and cavities. The latter is subdivided into six sections, devoted respectively to the operations on the nose, as the rhino-plastic; on the organs of vision, comprising those on the lacrymal passages, as well as those on the eye; on the mouth, embracing those on the lips, salivary organs, tongue, *fauces*, nostrils, the face proper, and the ear and its appendages. The first two sections conclude the first volume, and the other four occupies the beginning of the second.

The operations performed on the trunk, which constitute the subject of the second head or title, are distinguished, 1. into those on the neck; 2. those on the chest; 3. those on the abdomen; 4. those on the sexual organs; 5. those on the urinary organs; and 6. those on the *rectum* and *anus*, in an equal number of chapters. The chapters on the three first subjects conclude the second volume; while the other three occupy the third, or what properly constitutes the close of the second.

It is unnecessary to say that we regret that our limits will not allow us to enter into the details of this excellent work; for, in truth, this would be impossible, without attempting to give a view of the present state of surgery. This we may at some other season attempt; but at the present moment we must be satisfied with explaining in a general manner the style in which the author treats his subject; and when we do so as to one, it may be understood as applicable to all. M. Velpeau commences in all cases, after a short statement of his subject and its divisions, with a practical view of the first proposal, the rise and progress of an operation, until its perfect completion in the hands of the most accomplished modern surgeons. In these historical sketches, which are extremely interesting, the author shows great research and intimate acquaintance with the history of the art, treats every able surgeon and improver of the art with justice and candour, and, though he always exercises his right of criticism, he rarely censures without cause, and never fails to assign to its true author every useful proposal, every real improvement, and every genuine discovery. He then proceeds to give short sketches of the different methods of operation practised by different surgeons at the various periods of our art, and after a view of the comparative advantages of each, concludes by assigning reasons for the preference of one before another. In treating his subjects on these principles he presumes that the pathological characters of the several diseases as well as the anatomical relations of the parts implicated, are already known to the reader; and he confines himself strictly to the chirurgical details. In several instances, indeed, as in the case of laryngotomy and bronchotomy, the different forms and species of *herniæ*, hydrocele, and castration, hysterotomy, cystotomy, and operations on the anus, he enters into some anatomical and pathological considerations regarding the several forms and varieties of these protrusions, and the anatomical peculiarities on which they depend. These, however, are short, precise, and pointed, and are employed chiefly to explain the anatomical principles of the operation.

As particular examples of the manner in which M. Velpeau has observed this mode of arrangement and developement of his subject, we may refer to his account of inguinal and crural herniæ, his account of hysterotomy, cystotomy, and the delicate operations on the larynx and windpipe, and lacrymal and urinary passages. In these discussions and narratives the student who takes interest in the literary history of the past state as well as that of the present of his profession, will find ample means of gratifying curiosity, and exercising reflection.

We have indeed great pleasure in observing, that one of the leading characters of the present work is, that the author, unlike many of his countrymen, both knows and appreciates the writings of the surgeons of England, Germany, and America. To a person perusing many of the French authors, it might appear that no other nation had ever done anything to improve surgery, or promote its progress. From this the work of M. Velpeau presents a striking exception. Desirous to do justice to every individual who has improved either the pathology of, or the therapeutics in, surgical diseases, M. Velpeau lays before the reader in the case of every operation, a full and accurate view of the labours of those who have modified, or in any mode simplified or improved the operative process and treatment, so that the reader rises from his perusal of each chapter with a distinct view of the progressive improvements in the treatment of each disease, and with a knowledge of all the eminent men by whom improvements have been introduced.

In conclusion, we must say that this work presents a very just picture of the present state of surgery as an art and as a science. While it contains all the valuable matter of Sir A. Cooper, Scarpa, and Langenbeck on Hernia, of Scarpa and Hodson, and Breschet on Aneurism, of Dionis, Moreau, Deschamps, Bell, and Earle on Lithotomy, of Civiale, Leroy, and Heurteloup on Lithotrity, and, in short, of all the ablest writers on every subject involving difference of opinion, it supersedes the necessity of consulting and studying numerous isolated treatises, and will prove to the surgical reader a most useful work in abridging labour and saving time. It cannot fail to be very soon in the hands of every student and practitioner; and it only requires to be translated into English in order to become the surgical manual for several years. While its condensed form and accurate information render it preferable to most of its foreign competitors, it is infinitely superior to any other work in this country, and, in short, it may be justly characterized as the best work on operative surgery now extant.

It is accompanied with a quarto atlas of plates, illustrative of all the difficult operations which admit of illustration in this manner. Of these some are original, others copied from the best authorities. It is a further recommendation of this work, that, though good, it is by no means so expensive as to place it beyond the general reach of students and practitioners.

ART. IV.—*Transactions of the Medical and Physical Society of Calcutta*, Vol. V. Calcutta, 1831. Pp. 449, and xxii.

THE present volume, which bears witness to the diligence of the members of the Medical and Physical Society of Calcutta, contains a great number of curious and interesting facts, which require to be arranged under certain heads. For this reason we shall not observe in the following sketch the order of the volume itself, but consider several of the papers together, according as their subjects show them to be connected with each other. The volume commences with a biographical sketch of the late secretary, Dr John Adam, to whose zeal and industry the society are evidently much indebted, and whose memory is canonized in a faithful and affectionate tribute.

The first paper in this volume is *on the Malaria and Medical Topography of Oudypoor*, by Dr Hardie. The city of Oudypoor is situated in N. lat. 24° 34′ 45″ 6, and E. long. 73° 44′, and is built on a low ridge-shaped hill, connected with the hill ranges which skirt to the west the beautiful valley which takes its name from the city. This valley is elevated about 2000 feet above the level of the sea. A belt of rugged and precipitous hills surround the elevated valley on which the city stands, and the only entrances are by three or four narrow and difficult mountain-passes or ghauts. The hills are bare and barren, except during the rainy season, when they are covered to the top with vegetation. Within the valley are two lakes of considerable extent, and numerous smaller sheets of water, with much marshy ground. During the rainy season a large portion of the surface is under water or marshy; and at other seasons of the year artificial irrigation is carried on to a great extent. The prevailing winds throughout the year blow from the S. W. or S. S. W. and the climate is similar to the district of Malwa, in reference to temperature and other respects. "If, therefore, (says Dr Hardie,) heat, moisture, &c. acting on dead vegetable matter, be capable of producing malaria, or if malaria can be produced from moist mud having vegetable matter combined with it, here this poison ought to exist in all its virulence." Notwithstanding this, however, Oudypoor is particularly healthy during the greater portion of the year; but during the months of August, September, October, and November, the sick list is very great. Intermittent fever, and rheumatism or neuralgia, which Dr Hardie, in imitation of Dr MacCulloch, ascribes to malaria, are the most common forms of this disease; intermittent headach, ophthalmia, and amaurosis, are also of frequent occurrence. Cholera, the scourge of Asia and since of Europe, the author refers to this air-poison in a concentrated form,—or at least to some local poison generated in the soil, by whatever name it be called. According to the native accounts, cholera has been known in Oudypoor from time immemorial.

Following Dr MacCulloch in his general ideas regarding malaria and its often circumscribed localities, Dr Hardie asserts that there are particular houses in Oudypoor which have always been found to be unhealthy. A solitary and neglected tank in the middle of a cantonment may render the whole neighbourhood unhealthy; but it is towards the end of the rainy season, when an immense mass of dead vegetable matter has been collected, and a large marshy surface exposed to the rays of the sun, that disease most prevails. In proportion as the marshes dry up, the fevers become mild.

Dr Hardie's paper, though valuable as the contribution of an acute observer to ascertain a source of disease involved in much mystery, would have been still more so had his facts been stated with less reference to existing theories.

The second paper in the volume is *on the Alvine Fluxes of the Natives*, *by J. Hutchison*, *Esq*. Several varieties of intestinal disorder are described by Mr Hutchison as affecting the native soldiers. "Probably not less than three-fourths of the deaths in our native military hospitals and jails (says he,) are occasioned by the various types of this malady." The chief varieties of alvine flux, Mr Hutchison has observed, are:—

1. Simple Diarrhœa, where the stools are more frequent than usual, but natural in appearance, and scarcely more liquid than pultaceous. As the disease proceeds, the appetite is impaired, the feet swell, and the patient dies quite worn out and exhausted. A blush of inflammation over various spots of the intestinal tube, and a blue, glistening, and turgid state of the vessels of the mesentery and posterior peritoneum, are the appearances found on examination after death.

2. True Dysentery, attended with slight and scarcely perceptible heat and quickness of pulse. The stools are scybalous or pultaceous, mixed with quantities of white mucus, and probably tinged with blood. In this variety, the colon and rectum are found inflamed, especially towards their inferior terminations; and should the disease have been of long continuance, ulceration of their inner coats takes place.

3. Evacuations extremely watery, consisting almost entirely of a clear liquid, in which white shreds, or a quantity of clear mucus mixed with blood, is floating, with little or no appearance of feces. In this stage the pulse is full and a little quick, the skin slightly warm, the countenance of a sallow pasty appearance, and the abdomen slightly hard and tense. If the complaint be not now checked, the heat of surface increases, the pulse becomes frequent and weak, the watery evacuations increase in number, and at last assume the appearance of fetid water. In this variety, the whole length of the colon and rectum externally is found inflamed, and thick and fleshy to the feel. On being laid open, the whole extent is covered with ulcerations from the sise of sixpence and upwards, with red inflamed edges, covered with a tenacious greenish yellow matter or crust. The *caput cæcum coli* is converted into a fleshy mass, with numerous internal ulcerations; and on the lower part of the ileum is found occasionally a cluster of vesicles like small air-bubbles.

4. Of the fourth variety Mr Hutchison has neither seen cases at its commencement, nor examined the state of the parts after death. The symptoms of this are sharpened features, abdomen flat and shrunk, pulse running and thready, the motions fre-

quent, copious, feculent, and exceedingly offensive; and a particular odour exhales from the whole body.

5. In the fifth variety the stools are frequent, copious, liquid, and feculent, sometimes frothy;—the abdomen sometimes tumid, and the countenance livid and cachectic.

These varieties Mr Hutchison mentions rather with the view of directing the attention of others to the forms which the disease assumes, than as possessing distinct nosological characters. His mode of treatment is solely applicable to the disease as it appears among the natives. Laxatives of the mildest class, Mr H. found to be most efficient. A dose of castor oil, never exceeding half an ounce, with 45 or 50 drops of the tincture of henbane, was premised; and after this ipecacuanha, with opium in various proportions, was chiefly trusted to. Three grains of ipecacuan, and one of opium, morning and evening,—to three grains ipecacuan two grains extract of henbane and half a grain of opium three times a-day, were given with success. Venesection and leeches he never tried; but thinks they might be of use in the early stages.

We pass to the ninth paper, an *Account of the Cholera on board the H. C. ship Abercrombie Robinson in* 1828, *by W. Hitchcock, Esq.* Like every other account of this anomalous disease, the facts detailed by Mr Hitchcock only serve to increase the difficulties attendant on attempts to trace the source of the malady, or to indicate a rational treatment. On the morning of 10th August 1828, the vessel sailed from Bombay on its destination to China. The boatswain was attacked before the ship left the harbour with spasmodic cholera; and early on the morning of the 13th four cases manifested themselves, which were not noticed till the stage of collapse had supervened. The symptoms it is not necessary to detail. Of 38 cases which occurred, 24 died and 14 recovered; but not less than 20 out of the whole number were, previous to the attack, weakly and broken down by former illness; 17 of which number fell victims to the violence of the epidemic..

The treatment followed consisted of sinapisms, hot brandy and water, with laudanum, the hot bath, and scruple doses of calomel. Bleeding in the severe forms of the disease was also attempted, but with little success, even in instances where the blood flowed with freedom. In no one instance in Mr Hitchcock's experience, did he find the action of the heart quickened or invigorated by the fullest depletion. The spasms in the limbs were commonly relieved by active frictions of turpentine and laudanum. In the less severe cases, bleeding was productive of the best effects; and after 20 or 30 ounces were taken away, all the urgent symptoms were relieved. The two types of disease were, Mr Hitchcock says, "most ostensibly different; for in a number of instances, we have seen an almost total suspension of action and animal heat; while in the less severe cases we have a sensible increase of both." In the severe form the heart is oppressed with a load of dark carbonaceous blood, manifested by a labouring pulse, and deficiency of heat; the brain chemically as well as mechanically suffering; and the lungs appeared primarily affected, evidenced by short and hurried respiration, and the purple coloured lip, the mark of imperfect decarbonisation. But in the milder form, the functions of these organs were but little affected, and the case was at once pronounced favourable.

Another account of *Cholera as it occurred on board of the H. C. ship Berwickshire, in Bombay harbour*, is given by Mr Alexander Henderson, in an after part of the volume. The crew consisted of 150 men of the ordinary age, and the ship anchored in Bombay harbour on the 5th of June 1830, with a cargo from England of coals and military stores. From the 5th to the 10th, the work on board was very light. The weather was sultry—the thermometer from 84° to 87°, with squalls from the N. E. on the evening of the 6th and 9th. At this last date there was thunder and lightning, and a little rain; and the squall which occurred was accompanied by a chilly blast of air for about 10 minutes, followed by hot air or wind from the same quarter. The water procured on the arrival of the vessel for the use of the crew was described as being thick and discoloured; "by some it was said to be slimy, and others remarked numerous animalcules in it." None of the crew had been on shore before the 9th, and only two on the evening of that day. About 15 bazaar women had been on board during the night of the 8th, who went ashore next morning.

"About midnight of the 9th the first man was taken ill while sleeping in his hammock near the fore part of the ship. Some hours elapsed before a second case appeared, and only six cases of the disease had occurred before 4 P. M. of the 10th. From that time, during the night of the 10th and until the noon of the 11th they were increasing very fast. The surgeons of the other ships had lent their aid during the night; and when the healthy were removed to Butcher's Island, and the sick to the general hospital, 11 men had died, and about 30 had the disease. Many were attacked in their hammocks, several while sitting at light work on the poop, some when attending on their comrades; and there seems to have been no exception from the attack from any situation or employment."—"After the removal of the crew to Butcher's Island 13 more were taken ill on the 11th; 5 on the 12th; 2 on the 13th; 2 on the 14th; 2 on the 16th—and two on the 18th;—which latter were cases of relapse. The monsoon rains set in on the 16th; of the whole crew 94 men were taken more or less ill, of whom 15 died on board, 16 in the hospital and 7 on the island." P. 313, 314.

The H. C. ship Edinburgh, it is to be remarked, arrived in the harbour on the 6th, the day after the Berwickshire, with a similar cargo; and though in almost every respect the economy of the ships was nearly the same, no cholera appeared in the Edinburgh at the time of its prevalence in the other ship. A few cases, indeed, afterwards occurred, but these were chiefly slight ones; and the assistant surgeon died from that disease on the 16th. On board the Edinburgh, however, a small quantity of rum in a pint of congee was served out to the men in the morning as a preventive; rather more effectual measures had also been taken to prevent fruits being sold to the men; none of the crew went on shore; and only nine women were on board on the 9th.

Mr Henderson is decidedly of opinion, that, whatever be the origin of the disease, there was in the present case nothing which countenanced the supposition of contagion. 1. The disease was not propagated in the European General Hospital to a single attendant or patient, of whom there were more than a hundred. 2. Some of these who left the ship before the disease appeared died before they returned. And 3. the disease spread too rapidly in one place to be caused by any but the most active of all contagions.

Mr Henderson remarks, that, from one of the police reports on the deaths from cholera from one of the divisions of the island, the number from the 1st to the 9th averaged between 13 and 14 daily; but from the 9th to the 14th they had increased to 52, from which date they had gradually declined. This interval comprises six days corresponding to these in which the Berwickshire suffered most from the disease. He is, therefore, inclined to think the disease was epidemic, though, like other epidemics, its material existence and origin remain to be demonstrated. If it was not dependent on a peculiar state of the atmosphere, it seems to have been increased by the natural changes which occurred simultaneously with the attack; though it is "difficult to conceive these changes so to act as to be sensible within the range of a few feet only, and not to influence the crews of ships to leeward or windward, at the distance of a cable's length or two from the scene of action."

As a sequel to these two papers on cholera, though anterior in point of date, is Mr Tytler's *Observations on Mercurial Frictions in Cholera Morbus.* The author, adopting John Hunter's theory of the incompatibility of morbid actions to a certain extent, is inclined to believe that mercurial irritation may be incompatible with cholera; or that, if the one be artificially excited, the other must spontaneously cease.

The author relates eight cases in which this method was successful, and from which he draws the following conclusions.

" 1. That there exists an incompatibility between the action of cholera and the irritation of mercurial ptyalism. 2. That, consequently, if the latter can be excited in the system, the former will cease. 3. That, in general, the stomach is too irritable to retain calomel; and when it can, there exists in severe cases a spasm of the absorbents of the intestinal canal, which opposes the conveyance of that medicine into the system, and consequently prevents salivation from taking place. 4. That, under such circumstances, by mercurial frictions on the skin, that medicine is presented to another set of vessels, perfectly disposed to receive it, and at the same time all further irritation to the stomach is avoided." For these reasons he recommends, whether blood-letting, *stimuli*, narcotics, or calomel be employed, to lose no time in having recourse to mercurial frictions, at the rate of two drachms, rubbed into each thigh every hour or two, till the mouth and system are put under the influence of the mineral; and at the same time to support the strength by means of wine and etherial mixtures.

The next class of papers are those on *Urinary Calculi* in natives of Bengal, by Mr Burnard, and cases of Lithotomy by Mr Brett, Mr Lindsay, Mr Spry, and Mr Twining, and analyses of calculi by Mr Twining.

From the account of Mr Burnard, it appears that stone and urinary complaints are by no means so rare in India as they are generally represented in tropical climates. The Native Hospital of Benares, which was founded in 1811, receives annually about 7000 patients; and though several cases of urinary and vesical disease were among them, previous to the year 1826, when Mr Burnard was appointed, no case of lithotomy had occurred. His first case, which was cut on the 26th October 1826, died about two weeks after the operation with symptoms of fever and determination to the head; and since that period to the date of the communication, in 1830, twelve cases had presented and been operated on, and only one died, or, including the first, only two of thirteen cases. All these cases occurred in native Hindoos residing in or not far from Benares; and they occurred at the following ages; 1 at 5 years; 1 at 7; 1 at 8, and 1 at 9; 2 at 10; 1 at 13 and 1 at 14; 1 at 16, and 2 at 22. The smallest concretion weighed one drachm and ten grains, and the largest eighteen drachms. Four stones weighed between two and three drachms. Of the concretions, two were lithic acid, two oxalate of lime, two alternating, one lithic acid with lithate of ammonia, and the rest were mixtures of lithic acid, triple phosphate, and phosphate of lime.

Mr Burnard met with four instances of *calculi* lodged in the *urethra*, from which they were removed by operation.

In addition to those operated on by Mr Burnard, Mr W. F. Brett details seven cases in which the operation of lithotomy was performed, but of which only four recovered, two having died, one aged 17, the other 3, after symptoms of tetanus, and one, a very enfeebled sickly subject of 35, about a month after the operation. Several of these cases took place at Shajehanpore, and two at Baughhulpore. All were in Hindoos except one, which occurred in a Moslem child.

Mr A. K. Lindsay describes a case of a Brahmin boy, in which he cut on the gripe for the stone, and plucked it out by the aid of the handle of the scalpel. The child made a good recovery; and in twenty-one days after the incision, the wound was nearly cicatrized, and the health was good.

Another case, in an Indo-British boy, aged 7½, was operated on by Mr W. H. Spry, and made a good recovery; and Mr Twining mentions the case of an English seaman of 28, from whose urethra he extracted two concretions by incision, after the instrument of Weiss' had been unsuccessfully used.

The nitrate of silver, as a means of vesication and counter-irritation, is a good deal used in inflammatory complaints of the lungs. Mr J. C. Boswell of Penang has employed it with advantage in pneumoia, in sciatica, in palsy, and in dysentery. This agent Mr Boswell maintains to be equally effectual and more useful than the cantharides, in not affecting the urinary organs, in requiring no dressing, and in being very easily carried. Some cases are given to the same effect by the Secretary, who, however, doubts and denies its influence on consumption.

Various considerations on the influence of the blood on the brain, originally adduced by Sir Astley Cooper, and Dr C. H. Parry, led to the idea, that, since compression of the carotid artery relieved intense *cephalæa*, the ligature of that vessel might permanently cure various affections dependent on the state of the brain. In illustration of these views, and some less intelligible ideas of Dr Clutterbuck, Mr J. R. Preston applied a ligature to the right common carotid artery in a case of *hemiplegia* of the left side of the body, with the effect of inducing much pain in the paralytic arm, but without removing the paralytic symptoms; and in a case of epilepsy, with the effect of improving his general health, and abating the headach. The same gentleman threatens to apply ligatures to the carotids in cases of tetanus and hydrophobia.

In giving the foregoing account of the contents of this volume, we have been compelled to observe brevity and avoid detail. We have only to add, that, though there be a considerable number of isolated cases in the volume, we trust that the Society will not remit in the exertions of its members; and that they will continue to show their countrymen how much may be done by continued and persevering efforts.

Art. V.—*Traité Pratique des Maladies de l'Uterus, et de ses Annexes, &c.*—*Practical Treatise on the Diseases of the Womb and its appendages; founded on a great number of Clinical Observations; with an atlas of* 41 *Folio Plates, engraved and coloured, representing the principal morbid changes of the Female Organs.* By Madame Boivin, M. D. Chief Inspecting Midwife to the *Maison Royale de Santé*, &c. and A. Duges, Professor to the Medical Faculty of Montpellier.

Madame Boivin has already distinguished herself by the publication of a series of papers on various uterine affections, and states incident to puerperal females, which would reflect no discredit on the most eminent gentleman professors of the obstetric art. The present work is one of a character still higher; and shows that this lady, though confined by her professional pursuits to the diseases of the pregnant and puerperal state, and the morbid changes of the genital organs of the female, possesses, nevertheless, both the taste and the talent to illustrate these by the general lights of pathology and its fundamental science, morbid anatomy.

In the preface, which is manifestly written by M. Duges, we are informed, that the situation of Madame Boivin, as immediate pupil and successor of Madame Lachapelle in the *Maison Royale de Santé*, had made her acquainted with numerous cases of uterine disease, which she had studied attentively in the persons of the patients during life, and had examined carefully in their bodies after death, when circumstances permitted, and the figure, position, and colours of which she had with a pencil of great skill and fidelity represented. The result of these labours, continued for years, was at length an assemblage of almost every variety and form of uterine and ovarian, and utero-vaginal disease,—unequalled certainly in extent, and probably unrivalled in value. Though little doubt could be entertained of the propriety of communicating to the profession a treasure of information thus acquired, the indefatigable but diffident authoress was apprehensive that such an undertaking in a subject as much allied to medicine as to the art of midwifery, might savour of excessive presumption in her own powers, and she felt the propriety of dividing the responsibility by the aid of an associate, who might at the same time relieve her of some of the labour of arrangement and redaction.

Under these circumstances, it was doubtless natural to apply to M. Duges, who, as the nephew of Madame Lachapelle, the companion of her daily conversation, and the depository of her oral instructions, was also a fellow pupil of Madame Boivin, and, as a public teacher, might be supposed to be well qualified to aid the author in giving the work its best form for the purposes of instruction.

Of the work thus composed, the first volume only is at present published; and this consists of an Anatomical Introduction, and five sections devoted respectively to Solutions of Continuity, Lesions of situation, Changes in figure and volume, Distension of the womb by foreign bodies, and lastly, Excrescences and Degenerated growths.

In the introduction, our authors give an excellent and accurate account of the anatomical peculiarities of the womb and its appendages; in which the information of the most faithful anatomists is combined with the result of much accurate personal research. To a few only of them, however, our limits allow us to advert.

On the contested point of the muscular structure of the womb, Mad. Boivin has bestowed much attention, and first communicated in 1821, in a memoir read to the Academy of Medicine, some valuable facts. From a fleshy firm substance, of a consistence and appearance almost cartilaginous, close and pale at the *cervix*, a little redder in the body, this *viscus* derives a greater degree of density than most of the hollow organs; and by virtue of this it is supported erect, cannot be depressed in any point, without a general change of position, resists distension, and enlarges only in consequence of a considerable and long-continued force, as accumulation of menstrual blood in cases of imperforation, or the enlargement of the fœtus in pregnancy, &c. That this substance is traversed by numerous arterial and venous vessels, mutually anastomosing by large communications, is proved by the phenomena of injection, especially in the gravid or recently delivered uterus. The latter state, indeed, is requisite not only to convey a correct idea of the great developement of the vascular net-work, but to show the contractile fibres with all their characteristic properties.

Those who deny the muscularity of the womb, she remarks, and among others Lobstein, are obliged to admit that its fibrous texture is very manifest at the close of pregnancy, and compare it to the elastic tunics of the arteries. In the shrunk and condensed appearance of the unimpregnated womb, the uterine fibre, we may believe, is little capable of performing muscular functions; but the changes which fit it for these functions do not on that account change its nature.

Observation, indeed, shows even in the unimpregnated womb, 1*st*, longitudinal fibres forming immediately beneath the peritonæum a layer stretched longitudinally antero-posteriorly on the median region of the body of the organ at least; and 2d, oblique fibres converging from the whole external surface of the body of the womb towards its round ligaments, the tubes, and the ovarian broad ligaments. The latter may be distinguished into several broad flat bundles, according to the direction of their fibres. From the *fundus* of the womb, a *fasciculus* of transverse fibres, proceeds on each side to the origin of the Fallopian tubes, in which it is prolonged, and of which it forms the external or longitudinal layer; while part is reflected back to the ovary, of which it forms the ligament. On the anterior surface, two large oblique bundles, one descending, the other almost transverse, proceed on each side to the round ligament. On the posterior surface, beneath the bundle described first, is a very broad one, with oblique ascending fibres, dividing into two portions, one expanded in wings on the base of the ovary, the other winding on its side to join the anterior fibres and form the round ligament.

To these assemblages of fibrous texture may be added two very powerful bundles, which, issuing from the median and posterior region of the neck, separate and run backwards, raising at the same time the peritoneum, and are finally attached to the lateral margins of the middle region of the sacrum, constituting the posterior uterine ligaments or the *utero-sacral chords*, which are not less useful than the round ligaments in retaining the organ in its proper position.

Such is the arrangement of the external or superficial layer of fibres in the walls of the womb, originally explained by Madame Boivin in 1821 in the memoir already cited. During pregnancy the fibres of the median longitudinal layer are separated and thrown to the sides, where they are blended with the oblique ones, of which this median layer appears to be then only the continuation, with a slight change of direction in consequence of the central contraction of the entire organ.

In the womb of a woman dead when pregnant, or in childbed, maceration facilitates the dissection of the peritoneum; and it is then easy to recognize in the organ properly distended, the direction of the external fibres, which converge towards the Fallopian tubes, the ovarian and the round ligaments, but not exclusively to the latter, as Rosemberger believed, and represented in his plates, which are otherwise correct. By the same means we perfectly distinguish the direction of the fibrous bundles of the deep-seated or internal layer. It must, therefore, be admitted that the representation of Verheyen is just, viz. that the fibres of the *cervix* are chiefly transverse or annular, excepting some irregular bundles, the remains of the ramified

parcels observed there in the delivered state; and it may also be shown that the body is encompassed by concentric circles forming two large hollow canals, the centre and *apex* of which are indicated by the apertures of each tube, as has been already observed by Weitbrecht.

Besides these two principal layers, we may distinguish in the womb of a pregnant female several layers superimposed on each other, and the fibres of which mutually intersect in different directions, as remarked by Roederer, Loder, Meckel, and others. But these secondary layers are too intimately blended with the primary ones, and especially with that described as the *external* layer, to admit of its being strictly recognized in the history of the *rational structure* of the womb.

From the facts now detailed, Madame Boivin infers, that, while the neck of the womb consists chiefly of a hoop of manifest annular fibres internally, the body of the organ may be represented to consist of two cones formed externally by longitudinal and converging fibres, internally, of circular or annular fibres,—united by their one side,—and referring in this manner the structure to the general arrangement observed in the different canals of the animal body, which consist of longitudinal fibres internally, and circular externally. These views our limits do not permit us to examine critically. But we must be allowed to say that they are liable to two objections; the *first*, that not in all the canals can the anatomist recognize this arrangement; and the *second*, that, suppose it were demonstrable, it would not follow that the womb was organized according to the same standard.

In the gravid womb, the arteries are of small size, but the veins enormous; and those which arise from the hypogastric and ovarian form between the longitudinal and circular layers of fibres a net-work, large, especially at the insertion of the *placenta*, and which, interwoven with the deep-seated fibres, forms large apertures at the placental insertion, and from which, in a more minute form, in the unimpregnated uterus, Mad. Boivin infers that the menstrual secretion proceeds.

Madame Boivin agrees with the majority of anatomists in allowing that no mucous *membrane*, properly so named, lines the womb, and that the continuous and isolated form of the mucous tissue cannot be found beyond the *os tincæ*.

To show the dimensions of the womb at different periods of life, Mad. Boivin gives some accurate measurements. Roederer, whose observations have been confirmed by the present author, found the uterus of the new-born infant to be from 13 to 14, or even 20, lines long, and only 1½ inch in the female of six years. At the approach of puberty the organ becomes enlarged in every direction. In a virgin female of 25 years, it was found to be of the following dimensions.

Entire length,	26 lines.	Thickness of uterine walls.	superior,	5½ lines.
The neck being	13		lateral,	5
Breadth of the *fundus*,	17		posterior,	4½
Thickness of *fundus*,	8½		anterior,	4
Breadth of neck,	9½	Thickness of cervical walls	lateral,	3½
Thickness of neck,	7		posterior,	3
			anterior,	4

Total weight without appendages, 5 *gros.* = 4.9 drachms.

These dimensions acquire some increase, and undergo some modification in females who have once or twice become mothers. The body of the womb then becomes inflated and rounded; the walls thicker, the neck broader, and the *os tincae* more open. The increase of dimensions may be understood from the following measurements.

Total length,	2½ to 3 inches.	Thickness of neck,	8 to 10 lines.
Length of neck,	13 to 15 lines.	——— of contraction,	8 lines.
——— of body,	2 inches.	——— of uterine walls,	6 lines
Breadth of neck,	18 lines.	Diameter of vaginal aperture,	6 lines.
——— of contraction,	15 lines	Weight,	1½ to 2 ounces.
Thickness of body,	14 lines.		

After the puerperal period has terminated, the organ shrinks considerably, and by diminishing in size and contracting, or almost closing its cavities, returns once more to the condition in which it was previous to puberty. The primary cause of all these variations, and of the peculiar bloody secretion which periodically takes place, is, according to Madame Boivin, the sympathetic influence of the ovaries. This, however, it may be remarked, is referring the action merely to the same general law by which the ovaries are stimulated to assume their peculiar functions.

The structure of these bodies is very accurately described; and the authors distinguish carefully the changes which they undergo in different females; and in the same woman at different ages. They infer from a variety of facts, that at the menstrual period these organs undergo a degree of erethism or excitation similar to that which is believed to take place during sexual intercourse, and that the fimbriated extremities of the Fallopian tube may actually grasp, and inclose the ovary. This condition, they remark, has been recognized by several observers not only in hysterical girls, as in impregnated women, but in one instance in the dead subject by one of the present authors; and it is to such causes as these, that they, therefore, ascribe the *corpora lutea* found in females who have had no sexual intercourse, as well as those who have. These views are not entirely new. But it is desirable to have them confirmed by evidence less vague than that of the late Sir Everard Home.

After an accurate account of the *vagina* and its cutaneous appendages, the introduction is concluded with some judicious directions on the means to be employed by the practitioner to determine the existence of the different forms of uterine disease.

The *first* is the supra-pubal examination. This is easily understood from its designation. The chief precautions are, to have the head of the patient a little elevated, the thighs semiflexed, and the heels supported with the view of relaxing the hypogastric and iliac regions. Its chief object is to ascertain the state of the ovaries, the *fundus uteri*, the bladder, and the sigmoid flexure of the colon.

The *second*, the usual examination *per vaginam*, which requires separation of the thighs, the patient being laid on her back, or slightly inclined to one side, is chiefly to ascertain the state of the neck and body of the womb, its fulness and weight, or emptiness, and various states of the *vagina*. In both cases, it is proper to empty previously the *rectum* by means of a glyster.

Examination per *anum*, the third method, is required in the case of tumours situate between the womb and the rectum, or towards the lateral and posterior walls of the pelvis, enlargement of the body of the womb, displacements, and even imperforation, or preternatural narrowness of the vagina.

Lastly, ocular inspection may be requisite; and in this case the speculum is used; or a modification of the stethoscope, called the *metroscope* of M. Nauche, the individual who first used this instrument for the purpose now mentioned, may be employed.

The authors begin the consideration of the *Lesions* of the womb with the subject of *Solutions* of *Continuity*, which, though very briefly discussed, is illustrated by several pointed cases. It appears that the effect of these injuries is very various. Thus a large nail pierced the abdomen of a woman in her seventh month, and was followed by convulsions, hiccup, bilious vomiting and death at the end of sixty hours. The womb was found perforated two inches below the wound of the integuments, in consequence of its contraction; and the infant was punctured on the right shoulder. A girl, desirous to produce abortion, having thrust several times up the vagina a sharp instrument, which pierced the membranes and killed the fœtus, was attacked with profuse hemorrhage, intense fever, delirium, and convulsions, and died. On the contrary, the womb has been penetrated by the troisquart in cases of dropsy supposed, or actually combined with pregnancy, without bad consequences; and in the case of a woman mentioned by Rainet, though a musket ball had traversed the womb and killed the fœtus, she survived and became well. In another case, recorded by Richard, though a pregnant woman had received from a piece charged with ball and buck-shot, among other wounds, one in the left side of the iliac region followed by hemorrhage, fainting, labour and spontaneous delivery, and the infant presented below the left clavicle a wound in which were found, with portions of the mother's clothes, a buck-shot of the size of a pea. Yet both mother and child survived; but in the former, the wound, which continued fistulous, gave vent at several intervals to the menstrual blood, as well as purulent matter. At the close of three years it became spontaneously cicatrized; and had so long continued fistulous merely by the use of a cannula, which it was believed necessary to keep in it, and which fortunately was one day forgotten. These facts are well established; but the following, though not entirely fabulous, must be regarded as inaccurately recorded. In a woman who was gored in the belly by a bull, the womb was laid open and the fœtus contained in the membranes tumbled out on the ground. It was immediately replaced and the belly was united by suture. Not only did the woman make a good recovery; but she gave birth at the full time to a living daughter.

Lesions in situation, or irregular and unnatural positions of the womb, constitute a class of diseases by no means uncommon; and not only the usual process of gestation and delivery predisposes to these changes, but various accidents from carelessness, inattention, or otherwise during delivery, or afterwards, operate as exciting causes. All these changes in situation the authors of the present work follow the common practice of referring to *two* general heads,—the first, those in which the changes take place in the longitudinal direction, embracing elevation and depression,—the second, those in which there is more or less change in the *axis* of the organ.

Ascension or *Elevation* may depend on the presence of a tumour which, by raising the womb, may preclude vaginal examination, or, what is more frequent, it may arise from the traction operating on the *cervix uteri* either by its *fundus* in the course of enlargement, or by one of the appendages, an ovary, a Fallopian tube becoming augmented in size, when the elevation is at the same time continued with change of direction.

Prolapsus uteri, a much more frequent change, consists of three stages or degrees; 1*st*, *Depression*, or incipient prolapse, commonly called relaxation, when the ligaments are relaxed, and the *vagina* shortened; 2*d*, *Descent*, *(delapsus uteri,)* or when the *os tincæ* protrudes externally; and 3*dly*, *Precipitation*, or complete *prolapsus*, in which the uterus protrudes from the *vulva* and hangs between the thighs, covered by the reverted *vagina*, which contains, besides the womb and its appendages, the bladder, and part of the rectum. To account for these extreme degrees of protrusion, the authors infer, that the uterine ligaments entirely disappear, that their fleshy fibres are obliterated and in a state of atrophy, and that their peritoneal covering undergoes a reflected duplication to be continued over the neighbouring parts. Such an elongation and extenuation cannot easily take place in virgins and young girls, in whom, however, this accident has been observed by Degraaf and Saviard. But in those who have had frequent labours, and who have returned to their usual occupations too early, it is easy to see that it is facilitated by the previous relaxed state of the parts, and it is not unfrequently the result of the increased weight and swelling of the organ, when attacked by chronic inflammation, leucorrhœa, scirrhus, or polypus. The resistance of the ligaments may also be suddenly overcome by violent muscular effort, great and violent pressure on the belly, the shock produced by a leap, or a fall on the hips, and more slowly by the efforts of long-continued and habitual constipation. Similar effects may be traced to the presence of a tumour pressing on the organ, and the circumstance of congenital preternatural shortness of the *vagina*.

The treatment of this disorder is of two kinds, *palliative* and *curative*. Under the first kind are comprehended the use of pessaries, and all those means by which the disagreeable symptoms and effects of the disease are alleviated. In France, the species of pessary most generally preferred is that of linen covered with wax, resembling a round or oval disc or plate, with obtuse borders, and open in the centre,—or caoutchouc stuffed with scraped cotton, but of the same mechanical figure.

The curative treatment consists in the prescription of rest with the pelvis elevated, the use of astringent mineral injections, and fomentations of astringent herbs, the cold bath and douche. The authors mention in terms of commendation the method of curing prolapsus of the third degree by artificial arctation of the vagina, by removing a slip of mucous membrane as practised by Dr Marshall Hall.

Anteversion of the womb, though a common occurrence, has been frequently overlooked by writers and practitioners, even since its nature was elucidated by the observations of Levret, Desgranges, and others,—evidently because it is most frequently connected with some other affection, which engrosses the attention of the practitioner. It consists chiefly in the *fundus uteri* being depressed forwards on the bladder, while the *os tincæ* is carried backwards and occasionally upwards, compressing in either case the rectum more or less extensively. The cause of this anterior deviation of the uterine axis is in general weight of the womb, especially its *fundus*, which produces perpetual distension of the utero-iliac folds of the peritoneum. To this change of direction there is often a manifest tendency after delivery, especially if the placenta has been attached before; and this circumstance, with the slight preponderance to the anterior line of the *axis*, may by a fall, or stooping, or premature efforts, induce the complete disease. Often also there is a state of chronic inflammation indicated by increased weight, volume, and sensibility of the organ;—either a cause, an accompaniment, or an effect of the anteversion.

In treatment, Madame Lachapelle rarely employed the pessary or injections, and confined her measures to the use of local blood-letting, emollients, as baths, clysters, fomentations, and poultices;—and this mode of treatment, the present authors agree, is the most rational and the most successful. Afterwards, however, when the inflammatory symptoms have been by these means removed, they recommend the pessary as necessary to complete the cure.

Retroversion is described in the usual terms. It has been very generally studied; but its causes have not been always ascertained. Retention of urine, regarded as the most powerful cause of retroversion by Denman, Merriman, Callisen, Boer, and Siebergundi, may be, according to our authors, as much the effect as the cause, since, if the womb was once made to retrovert by the elevation of the cervix, this position would naturally interrupt the course of the urine, by elevating the bladder against the *pubis*, and compressing its neck with the urethra against that bone.

It must be distinguished from *ascites*, and from tumours developed between the *vagina* and the *rectum*.

This derangement of the position of the womb is ofttimes so obstinate, that it has led to the proposal and even to the execution of very violent and desperate means of remedy. It is by no means difficult to replace the *uterus*; but it is exceedingly difficult to retain it in the proper position. When reduction cannot be effected, it has been proposed to puncture the bladder, to plunge a troisquart into the *uterus*,—and this was really done by Baynham,—to divide the *symphysis pubis*, or to open the abdomen by an incision in the hypogastric region, introduce the hand and elevate the retroverted womb.

The *uterus* may form a hernial protrusion, either ventral, crural, or inguinal.

Preternatural attachment of the womb is the last subject discussed in the second section. This may, and does most frequently, arise from previous inflammation of the uterine and pelvic *peritoneum*, which appears frequently to occur at an early period of life in children, and from *metritis*, and *metro-peritonitis* in the adult. Hence proceed morbid adhesion, and the attachment of the organ to parts to which it is not so in the natural state. Such attachments, especially if they fix the ovaries in the Fallopian tubes in such a manner as to prevent the motions necessary to conception, may prove the cause of sterility, of abortion, of abscesses in the neighbouring parts, and various lesions which may terminate fatally. In general, these processes are indicated by painful traction in the hypogastric and pelvic cavities, the usual symptoms of *metritis*, uterine hemorrhage and abortion, about from the third to the fifth month. For such diseases, art promises little relief, and certainly no remedy. In one case only, was recovery effected under the use of mercurial friction continued for a month.

In the third section, devoted to *Alterations in Shape* and *Volume*, the first subject treated is that of *Deformities*, or, to speak more accurately, *malformations*. To this head, the authors refer five sorts of changes; 1. Large loose folds of the womb; 2. Vegetations or ulcerations of the *cervix uteri*, causing swelling, and lateral or globular distension of the *os uteri*, or enlargement of the *glandulæ Nabothi*; 3. Adhesions or obliteration of the *os tincæ*; 4. Elongations of the *os uteri*; and 5. Atrophy and hypertrophy of the whole body of the womb.

The second sort of change considered in this section is *Flexion or Incurvation* of the womb, a species of change in which the body of the organ is incurvated or inflected, either laterally or antero-posteriorly on the *cervix*, at an angle more or less obtuse, and in such a manner that it constitutes two portions mutually approximated. In general the organ is more or less rigid at the point of curvature; and less frequently there is slight mobility of the body or the *cervix*.

This change, the authors tell us, they have good reason to believe, is occasionally congenital; at least they have observed it in many girls in whom the *uterus* had never undergone any of those important changes which succeed puberty and sexual intercourse, pregnancy and delivery. But they admit that these cases are rare, and that the rapidity with which the organ is developed at the age of 12 or 14, explains more satisfactorily the process by which a more perfect or rapid developement of one side than of the other, may induce incurvations in some sense organic. Conversely, after delivery, it may happen, they argue, that a more speedy reduction, and a more complete contraction of one side of the womb than of the other may produce analogous effects, and that in married or sickly females, the *uterus* inflamed, or irritated, may be elongated and softened, or retracted and indurated by the relics of inflammation, albuminous effusion, the contraction of an abscess, or some irregular operation of its muscular tissue. From this, and from the circumstance, that in the dead subject the organ has been found of a deep red or even black colour, and has presented fibrous degenerations, adhesions or obliterations of the neck, they infer that incurvation may be often the result of chronic inflammation of the womb.

But whatever be the cause of this organic deformation, it produces very serious mischief in the uterine circulation; and the authors relate one case in which it excited uterine irritation so violent, that the individual *manu stuprationi se omnino dederit*, and died epileptic. Of this variety of change several very interesting cases are given by the authors.

Inversion or *Introversion*, which comes next under consideration, is properly described as that state in which the womb either entirely or partially is inverted like a stocking or the finger of a glove; is changed into a pouch nearly like the fromer, but with the peritoneal surface become internal instead of external, or rather concave instead of convex, and with the *fundus* being depressed to occupy the lowest instead of the highest point, while the aperture is directed to the abdomen instead of the vagina. The latter is rather an aggravated character, since the aperture in that case is not like the *os uteri*, but a large loose cavity with the *fundus* at the bottom. Of this change Leroux and Dailliez admitted three degrees; but the present authors distinguish four; the first, *Simple depression* of the *fundus*, which then becomes concave towards the abdomen, and convex towards the *vagina*; *2d*, Depression of the body into the cavity of the *cervix*, and protrusion between the separated lips of the *os tincæ*; *3d*, Protrusion of the neck into the aperture of the *os tincæ*, when the womb is lodged in the *vagina* like a pedunculated tumour; and *4thly*, when the *os uteri* as well as the *fundus*, body and *cervix*, are inverted and carried downward into the *vagina*.

The last stage is rare, but it has been observed by Vander Wiel, Bandelocque and Levret.

Though little accurate knowledge is possessed on the causes of this excessive invagination, the present authors infer that it is generally connected with a softened, attenuated, distended state of the organ, and that, in these conditions, it is likely to be introverted after delivery or abortion, especially if the former be effected in circumstances which require concealment and perhaps precipitation, which always imply a certain degree of bad management or accidental injury.

From this it might be inferred, that introversion could never happen to persons in the hands of a skilful and cautious accoucheur, or to any except women who have had children.

Baudelocque, however, states, that he saw it in a girl of fifteen whose hymen was entire; and the present authors admit that it may happen in able and circumspect hands, in consequence of irregular or partial contraction, with *inertia* of the rest of the organ; and they adduce an interesting example of temporary introversion induced in this way, with hemorrhage resulting from incomplete, that is, partial or local *inertia* of the womb. The other causes, as forcible pulling at the umbilical chord, and the continued gravitation of a large polypus, are well known.

Our limits will not allow us to enter into the details on the symptoms, the diagnosis, the different measures employed to detect the kind of lesion, and the method of treatment required for its removal. But we recommend them to the particular attention of our readers as highly instructive, and in every respect interesting.

The fourth section, on Distension of the Womb by Foreign Bodies, is subdivided into six chapters; the *first* containing a few general remarks; the *second*, on *physometra*, or the presence of an aerial fluid in the cavity of the womb; the *third* on *hydrometra*, or the presence of serous, sero-mucous, or sero-albuminous fluid in its cavity; the *fourth* on uterine concretions; the *fifth* on retention of the menstrual blood; and the *sixth* on the different varieties of moles.

The first is rare, and, when copious, depends in general on cancerous or some other malignant ulceration. The second, *hydrometra*, may often be traced either to feeble constitution, or violence inflicted on the womb, or some similar cause of local inflammation. Uterine concretions may from their analysis, which indicates much animal matter, containing salts of potass, of soda, and of lime, or gelatine, or phosphate of lime, be inferred to consist chiefly of the coagulated, indurated, and retained secretions of the organ. Retention of the menstrual blood only takes place when the *os uteri* is closed by false membrane, mucous exudation, or chronic inflammation of its lips, or when the vagina is preternaturally contracted, obliterated, adhering, or imperforated.

On the subject of moles we have, on a former occasion, submitted to our readers some of the researches of Madame Boivin. The present chapter contains a more comprehensive view of all the species, which the present authors arrange in the following order: 1*st*, the false germ or *ovum*; 2*d*, the fleshy mole; and 3*d*, the vesicular or hydatid mole. By this limitation moles must be regarded as in all cases the vitiated or morbid product of conception, and can occur, therefore, in no female who has not had sexual intercourse.

The first occurs, when in the first days or weeks after conception, in consequence of the formation of a small tumour or an effusion of blood at the origin of the umbilical vessels, partial detachment of the membranes, and perhaps mere disorder of the circulation by physical shock, panic, &c. the embryon dies, and is then dissolved in the water of the amnion, like a flake of gelatine. This, which constitutes the *false germ*, properly so named, and is indeed a blighted *ovum*, seldom continues in the womb beyond *two* or *three* months, and cannot then be distinguished from a regular pregnancy at the full time. In general it is expelled entire and without rupture.

Of fleshy moles two kinds are described, one hollow in the centre, the other solid,—in both cases a degeneration of the envelopes of the fœtus.

The vesicular mole proceeds from the same cause; but for the minute account of this we refer to a former number.

The uterine tissues are liable to the same form of degenerated structure as those of other organs. The present authors specify seven kinds incident to the organ; 1*st*, the vascular; 2*d*, the cellular; 3*d*, the fibrous; 4*th*, the osseous; 5*th*, the tubercular; 6*th*, the steatomatous; and 7*th*, the cancerous. The whole of these agree in being transformations of one or more of the uterine tissues into a morbid or anomalous structure,—a structure not naturally found there.

The *vascular* degeneration is not well known. The authors represent it to be of two kinds; one consisting of soft granular fungosities more or less disposed to hemorrhage, and resembling in this respect the cauliflower excrescence of Clark; the other a hematoid substance, which the authors maintain is the anormal developement of the erectile tissue, and what have been erroneously, they say, denominated *fungus hematodes* by the English surgeons. On this point we must inform our authors, that no class of men can better distinguish the *fungus hematodes* from aneurism by *anastomosis* than the English, who originally gave the best descriptions of both forms of the disease.

The *cellular excrescence*, though not to be confounded with polypus, bears, however, a great affinity to that growth, and which appears, from the account before us, to consist in elongation or hypertrophy of the mucous membrane, with infiltration of serous fluid into its interstitial cells. Much less frequent in the womb than in the nasal cavities, they nevertheless occasionally appear at the *os tincæ*, the only point, perhaps, at which there is sufficient mucous membrane to contribute to their developement. The *fleshy and fibrous degeneration* seems to correspond to the vascular *sarcoma* of the English. The cartilaginous and bony degeneration is the *osteoma* of the womb,

—a disease in almost every case of a malignant character, but nevertheless not always speedily fatal. It appears in many instances to be the cause of sterility, abortion, frequent uterine hemorrhage, or incurable *prolapsus*.

The *tubercular degeneration* seldom appears alone in the womb, and is most usually conjoined with some other transformation. It has too often been confounded with *steatoma* and *scirrhus*, from both of which it is unquestionably distinct. It consists in the substance of the organ being infiltrated, covered, or separated by a mass of concrete, white, or yellowish matter, rather albuminous than of other characters, void of fat, and in consistence varying from the firmness of raw chestnut or plaster, to that of puriform semifluid pulp. It is remarkable that one of the present authors is satisfied, by numerous researches, that these bodies proceed, as Dr Baron represents, from a body originally small, vesicular, and colourless, to acquire bulk, consistence, and opacity. In other instances, however, tubercular matter is merely a simple deposit of a species of concrete purulent fluid in the cells of the affected tissue, in the natural vacuities of an organ, or at its free surface. Of this kind are most of the tubercular productions of the womb, and which are seldom seen in its substance, and most generally at its external or internal surface.

Of steatomatous and carcinomatous tumours nothing very particular is stated under the present chapter; but in two subsequent ones, devoted to *fibrous* tumours, non-pediculated and pediculated, the reader finds a great deal of accurate and important information.

These fibrous tumours, which have been assembled under the general head of *sarcomatous*, and in structure have been compared to that of the womb itself, by Cruveilhier and Dance as a species of local hypertrophy, and by M. Blandin have been ascribed to some deposit of fibrine arrested in the uterine vessels and then organized, are important, because they are the frequent source of hemorrhage and other discharges,—because they often simulate pregnancy, may cause abortion, or impede delivery,—and, in short, in a variety of ways may become the source of great perplexity. In a long and minute account by the present authors, all the circumstances relating to the diagnosis of their presence, and the treatment to be followed, are carefully and judiciously considered. The different modes of removal by evulsion, excision, and ligature, are to be resorted to or avoided, according to the circumstances of each case.

It is time, however, that we close this article, the length of which is more in accordance with our limits than with the importance of the subject or the value of the information communicated. The present work promises, by the specimen now produced, to be one of the utmost value to the obstetrical practitioner. Besides the selection of interesting and instructive cases, with which it is accompanied, the principal lesions are exemplified by beautiful and accurately coloured delineations, engraved from drawings taken chiefly by Madame Boivin herself. Inspection alone of these figures will at once satisfy every one conversant with pathological appearances of their extreme accuracy. We have only to say, that they should be carefully studied by every one who has occasion to treat female complaints in general, or uterine diseases in particular.

ART. VI.—*Observations on Surgery and Pathology, illustrated by Cases, and by the Treatment of some of the most important Surgical Affections.* By WILLIAM JAMES CLEMENT, Surgeon. London, 1832. 8vo. Pp. 230.

THE first paper of this volume is devoted to the investigation of the question regarding the muscular structure of the urethra. It is well known that many anatomists and physiologists, who cannot conceive motion in the animal body without the presence of muscularity, maintain that the urethra is provided with muscular fibres, by virtue of which it is supposed to perform most of its functions, and the presence of which is supposed to explain many of its phenomena when diseased. John Hunter is the person who is generally regarded as the head of this set of partizans; and his opinions on the subject have been strenuously defended by Sir Everard Home.

Sir Charles Bell, on the contrary, denied the muscularity either in structure or function of the urethra; and his arguments, which are found in his Letters on Stricture, (Letter III. p. 94-105), must be conclusive and satisfactory to every one who knows what are the proofs of muscular structure, and can appreciate the difference between matters of fact and matters of opinion.*

Mr Clement has undertaken a minute and accurate comparison of the observations and testimonies of all the ablest anatomists, from De Graaf, Morgagni, Haller and Lieutaud, down to Portal, Cloquet, and Sir Charles Bell, and adduces an array of testimony which must indisputably prove, that, so far as the evidence of these observers goes, the urethra is by no means muscular in structure. From these facts, and from those contained in the excellent paper of Mr Shaw, Mr Clement refutes the inferences of Sir Everard Home regarding the muscularity of the urethra. The most conclusive of these arguments, sufficient, perhaps, of itself to determine the point, is the experiment by which Mr Shaw showed that a fluid injected into the urethra in the dead body is expelled as forcibly or more so than in the living.

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* Letters concerning the Diseases of the Urethra, by Charles Bell. London, 1811.

We must say for ourselves, that the arguments of Sir Charles Bell, published in the letters already quoted, with such dissections of the parts in the dead subject, and such observation on them in the living, as it fell to our lot to make, completely satisfied us long ago that the urethra is *not* muscular; that there is no such thing as spasmodic stricture in the sense understood by the late Sir E. Home; and that stricture, as Sir C. Bell maintained, is always the effect of the process of inflammation. The inquiry of Mr Clement, however, places the whole subject in a clear light; and if there be any one still unconvinced, let him peruse that essay, and if he is capable of seeing the connection between premises and conclusions, he must admit that the point is decided.

This preliminary point being established, Mr Clement proceeds to the practical application, which is, that, as all the symptoms of stricture depend on inflammation of the urethral membrane or its effects, the great object of the surgeon should be to pursue a line of treatment quite antiphlogistic, unirritating, and to avoid the measures too often recommended for spasmodic stricture.

In the *first* place, therefore, when a patient after recent gonorrhoea, applies for Mr Clement's assistance in consequence of his stream of urine being contracted, or discharged with difficulty, instead of introducing the bougie, which could not fail to irritate a membrane recently inflamed, and probably morbidly thickened, he orders a small quantity of the camphorated mercurial liniment to be rubbed along the line of the urethra night and morning; "and it has always happened," he adds, "that those patients who have had confidence to pursue this plan and give it a fair trial, have returned to me in the course of a short period, declaring themselves perfectly free from any obstruction or difficulty in making water."

In those instances in which he has been obliged, for the satisfaction of the patient, to sound the urethra, if he found a tender or a contracted point, where the instrument stopped or gave pain, after withdrawing the instrument he always perceived, by pressing the urethra, that the patient complained of soreness; and instead of introducing the bougie again and daily, as is too often the case, he ordered leeches to be applied along the tender or indurated part of the urethra, and to be repeated once a week for a month or longer, according to their effects, prescribing at the same time full doses of the *liquor potassæ*, with the view of abating the acridity of the urine, and preventing it from stimulating the tender surface. When soreness and pain were in this manner abated or removed, Mr Clement had recourse again to the camphorated mercurial liniment; and in a short time a full-sized bougie was easily introduced into the bladder.

In some instances Mr Clement has employed nitrate of silver, not as an escharotic, but from its known power in allaying the irritability of inflamed surfaces.

This mode of practice is extremely rational, and deserves the attention of surgeons.

The second part of the work of Mr Clement, on hernia, consists of a series of cases, with operations, illustrating some of the most troublesome varieties of that disease.

In the first case,—one of strangulated inguinal hernia in the female, a considerable portion of the *omentum* protruded at the wound in a mortified state, on the 8th day after the symptoms of strangulation, and the 7th from the day of operation; yet the part separated favourably in the course of ten or twelve days; and at the 20th day after the operation, the wound was healed, and she had no complaint.

At the close of this case Mr C. expressed his aversion to the use of the tobacco enema, after the use of which he informs us, that he never saw a patient afflicted with strangulated hernia recover either in London or Edinburgh. He also justly disapproves of strong cathartics both before and after the operation; because in the former case they cannot fail to increase the irritation of the intestine, unavailing above the strangulated point; while in the latter, it is safer to solicit the bowels by the more gentle stimulus of *enemata*. The propriety of these opinions no one can doubt; and we believe no good surgeon ever thinks of employing violent cathartic medicines in hernia.

In the second case, one of strangulated inguinal hernia in a woman of 70, death appears to have ensued in consequence of peripneumony; but, as no examination took place, this opinion is founded merely on semeiological evidence.

In the third case, a man aged 29, affected with strangulated ventro-inguinal hernia, underwent the operation, and made a good recovery; but about one month after the wound was healed, he was attacked with epileptic fits, occurring every two or three days. Various remedies and plans of treatment were employed; and at length, under the use of the pills of the ammoniuret of copper, the fits became milder and less frequent, and at length entirely left him. As the patient had been largely blooded before and after the operation, (about 30 ounces before, and 54, viz. 30 and 24 ounces in the course of eleven hours after it,) Mr Clement infers that the epileptic attacks were of the kind induced by evacuation.

The fourth case was one of strangulated femoral hernia in a woman of 70; and, though she was attacked with severe peripneumony after the operation, requiring blood-letting, &c. she made a good recovery. The stricture was very narrow, so that it was difficult to introduce a bistoury; and Mr Clement infers, from the history of the case, that the intestine must have been strangulated, for six days at least, before it was relieved by the operation.

Still more remarkable than this is the sixth case. For though the patient was a woman of 77, and adhesive inflammation had taken place to a great extent, not only between the *omentum* and the sac, but also between the intestine, the *omentum*, and the peritoneal covering, so as to connect these parts by pseudo-membranous bands, not of very long standing, according to the testimony of the author; and though the intestine had remained strangulated for seven days;—yet the patient made an excellent recovery, left her bed in a fortnight, and in less than a month after the date of the operation, walked from her own abode to that of Mr Clement.

The seventh case is also a good one, in so far as the hernia, which was also femoral, was complicated in a woman of 36 with pregnancy. Mr Clement, indeed, expresses his surprise that abortion was not produced by the shock of the operation, especially since fainting had taken place twice before operation,—once by blood-letting, and again by the use of the warm bath; and that occurrence he appears to have prepared both himself and the friends of the patient to expect. This event, however, did not take place; and the patient recovered favourably,—a circumstance which shows that we have still somewhat to learn concerning the circumstances which determine abortion.

The fifth and eighth are both unsuccessful cases. In the former, which was a case of umbilical hernia in a woman above 70, death took place in consequence of *enteritis*. The stricture was firm, cartilaginous, and so narrow that it resembled a piece of pack-thread tied round the intestine. It it probable, though there was no inspection, that the process of enteritic inflammation was too far advanced, and too generally diffused, when the operation was performed, and that it did not cease, but proceeded regularly towards the fatal termination. In speaking of this case, Mr Clement takes occasion to express his disapprobation of a large incision over the top of the tumour, in consequence of which the whole intestines are very liable to be protruded and exposed,—and to explain the superior advantage of an incision by the one side, in which case it will be nearer the strictured part, so as to admit of its more easy division, and because, when adhesion exists, it is more likely to be at the prominent or superior part of the tumour.

In the latter case, the eighth, one of strangulated inguinal hernia in a woman of 56, the fatal event, which took place eighteen hours after operation, appears to have been the result of gangrene, in consequence of the disease having proceeded too great a length previous to the operation. This was determined by inspection.

> "The rupture was the largest I ever saw, measuring in length 1 foot 5 inches; in circumference at it broadest part 2 feet 3½ inches;—it extended more than ⅔ds down the thigh, and concealed every part of the pubes, and the external organs of generation."—"The colon was followed downwards by enlarging the incision made into the sac, when numerous convolutions of the *jejunum* and *ileum*, more than a yard in length, were exposed of a black colour and in a state of gangrene. When the tendon of the external oblique muscle was slit up, and the portion of distended colon was reduced, the convolutions of the small intestine contained in the lower part of the tumour were quite free from all pressure and strangulation, and could without difficulty be returned within the cavity of the abdomen. The bottom of the sac contained nearly a quart of serous fluid, which during the lifetime of the patient must have formed a considerable proportion of the bulk of the tumour, and given it the regular and uniform appearance which it presented."

In his remarks on this case, Mr Clement enforces the urgent necessity of early operation; and indeed there is scarcely a disease requiring the aid of the surgeon which so urgently demands promptitude as that of strangulated hernia. Early operation insures almost the physiological certainty of the recovery of the patient. Lose time, and all is lost.

This part of the volume is concluded by the narrative of an interesting case of *cystocele*, or hernia of the urinary bladder, in which that organ had been tilted upward, from its situation in the pelvis, and protruded through the left abdominal ring, so as to descend into the scrotum, in the cavity of which it was situate with the left testicle in the form of a large pyriform bag. Though the whole of the vesical walls were attenuated, and the muscular coat separated and expanded, the upper and anterior part was particularly thin, red, and pointed, and gave way during the dissection, allowing the issue of two quarts of very fetid urine.

So far as could be learnt, this protrusion had not taken place till the patient was the age of 30. After this period, he experienced difficulty in voiding his urine; and in the latter periods of his life he never could make water, without first raising the pendulous rupture from between the thighs toward the belly, and then rolling it about for some time, when the urine flowed in a full stream; but never in large quantity at one time. The introduction of the catheter, which was also employed, never procured more than a wine-glassful; and this was easily explained by the fact, that the instrument never went beyond the neck of the bladder, since the *fundus* and body of the organ were contained, not in the *pelvis* but without that cavity, on the anterior part of the thighs. It is remarkable also, that, though in most cases of cystocele, part only of the bladder was protruded, and part retained in the *pelvis*, in this case the whole of the organ, except the neck by which it was connected to the urethra, was displaced.

A case of *spina bifida*, with ulceration, which forms the third paper in the volume, is chiefly remarkable for showing the traces of inflammation with the cavity of the tumour. The sac was three times punctured, and the fluid evacuated; but the day after the last puncture the breathing became disordered, and next day convulsion and *coma* ensued, followed by death.

On inspection, fluid was found in the cerebral ventricles, and the substance of the brain was softer than usual; and the spinal chord, though sound above, was deficient in the lumbar region, where the cavity of the tumour had a free communication with the fluid in the cerebral ventricles. The spinous arches and processes of the lumbar vertebræ were deficient,—showing that the early occurrence of the effusion of fluid had interrupted the process of ossification.

Mr Clement then narrates the circumstance of a case of aneurism by *anastomosis*, in which he applied a ligature to four vessels, which appeared to furnish the principal vascular supply of the tumour. The vessels were thus obliterated, and the tumour itself became less prominent; but it did not disappear; and Mr Clement was under the necessity of extirpating the tumour entirely by excision. The patient, a child of nine months, was much exhausted by the operation, in which much blood was lost; but eventually made a good recovery.

A successful case of lithotomy in a female child of five years, the removal of a cartilaginous tumour from the *biceps flexor cubiti*, and the extirpation of a large tumour attached to the right angle of the lower jaw, and extending over the neck to nearly the clavicle, form the last subjects recorded in the volume.

The event of the latter case, which was followed by palsy of the right cheek, the right *ala nasi*, and the right lower *palpebra*, suggests some observations on the influence of the facial nerves. The author himself, though disposed to doubt that the *portio dura*, or lateral facial nerve, was injured in the operation, during which there was no expression of acute suffering, allows nevertheless, that it may have been injured.

In conclusion, this volume must be allowed to contain some valuable surgical information, and is highly creditable to the originality and industry of Mr Clement. It shows that he not only observes the characters and progress of his cases, but that he reflects on them, and reflects to some purpose.

ART. VII.—1. *Lehrbuch der Pathologischen Anatomie des Menschen und der Thiere.* Von Dr ADOLPH WILHELM OTTO, Koniglichen Medicinal Rath im Medicinal Collegium für Schlesien, ordentlichem Professor der Medicin un der Universitat, und der Medicinisch-Chirurgischen Lehr Anstalt zu Breslau, u. s. v. Erster Band. Berlin, 1830. Pp. 472.

2. *A Compendium of Human and Comparative Pathological Anatomy.* By ADOLPH WILHELM OTTO, Royal Medical Councillor in the Medical College of Silesia, Ordinary Professor of Medicine in the University and Medico-Chirurgical Academy at Breslau. *Translated from the German with additional Notes and References*, by JOHN F. SOUTH, Lecturer on Anatomy at St Thomas's Hospital. London, 1831. 8vo. Pp. 456.

DR ADOLPHUS WILLIAM OTTO, professor of medicine in the University and the Medico-Chirurgical Academy of Breslau, must not be confounded with Dr Charles Otto of Copenhagen, —the author of Travels in Great Britain, France, and Switzerland, noticed in this Journal some years ago.

Dr Adolphus William Otto, the author of the present work, is evidently a person of most extensive reading and intimate acquaintance with works on pathological anatomy—a science in which it is evident he takes great interest; and has given, in the present volume, the most complete view of the facts, doctrines, and literature of this science, yet extant. The author had previously drawn up a catalogue of the preparations contained in the Royal Anatomical Institute of Breslau; and it is not improbable that his familiarity with subjects of this nature may have contributed, with other causes, to direct his attention to the composition of the present work.

The treatise, of which only the first volume is before us, consists of two parts,—one of a general, the other of a more particular nature.

The first, or general part, is divided into eleven sections, in which the author treats of the following subjects. 1. Errors

of the animal organization in general; 2. Errors in the number of parts; 3. Errors in the size of parts; 4. Figure; 5. In position; 6. In relative connection; 7. In colour; 8. In consistence; 9. In continuity; 10. In texture; and 11. In contents. The consideration of these subjects occupies about one-fifth of the volume.

Of the second, or particular part, only the first book, which occupies the residue of the volume, and treats of the morbid changes occurring in the individual organs or organic systems, is published. This is divided into nine sections, which, however, are numbered in continuity with those of the first part from the commencement of the volume; and in these nine sections the morbid changes incident to the following systems and textures are considered. 1. The cellular or mucous tissue; 2. The cellular membranes, including serous membrane, mucous membrane, and skin; 3. The horny tissue, including cuticle, nails, and hoofs, hair and feathers; 4. The osseous system; 5. The cartilaginous system; 6. The fibrous system in general, and the joints in particular; 7. The muscular system; 8. The vascular system, including the pericardium and heart, the arteries and veins, and the lymphatic vessels and glands; and 9. The nervous system, including the brain, spinal chord, and nerves.

In conducting the details of these various subjects, Dr Otto shows that he understands well what is meant by pathological anatomy. After classifying and distinguishing each form of morbid change, he enumerates the principal anatomical and physical characters by which it may be distinguished from those with which it is liable to be confounded. The most essential details are given briefly in the text; and proofs, illustrations, explanations, and references are subjoined in the shape of notes, in a smaller character. In both of these divisions, the author displays accurate and extensive knowledge of the subject; and his work constitutes the most complete literary history of pathological anatomy that has yet appeared. In short, from every source he has endeavoured to collect whatever pertains to his subject, and to exhibit in a small compass the concentrated information of all the pathological physicians and surgeons who have flourished in Europe for two centuries.

Of a work so complete in method, and so full in details, it is important that the contents be made more generally accessible than could be done when in its original German. Mr South has on this account rendered a most useful service to the English student of pathology, in providing him with a good translation, and in further adding occasional notes and references. The work requires only to be known in order to be perused. If it does not in every instance give full accounts, it gives them in sufficient detail for the beginner, and will show the advanced student the sources in which he can investigate his subject more fully and perfectly.

It gives us pleasure to see so many attempts to establish the facts and doctrines of pathological anatomy on a sure foundation, and to give it the air of a satisfactory science. Works like those of Dr Otto will induce physicians and surgeons to study the subject more attentively, and will doubtless diffuse its cultivation in a more accurate way than heretofore.

Art. VIII.—*Essay on the Natural History, Origin, Composition, and Medicinal Effects of Mineral and Thermal Springs.* By Meredith Gairdner, M. D. Edinburgh, 1832. 12mo, Pp. 420.

The present essay is unquestionably one of the ablest and most instructive applications of physical and chemical science to medicine which we have for a long time had occasion to peruse. Though originally only founded on an inaugural dissertation, which was infinitely above mediocrity in point of arrangement, information, and philosophical reasoning, the author has, by more extended reading, and by visiting most of the celebrated mineral springs in this country and on the Continent, provided in the present essay information which will at once render it a standard treatise on the subject of which it treats. We do not pretend to give any analysis of its contents; but, to give our readers some idea of their nature, we shall merely glance generally at the chief divisions, and subjoin a few extracts on some points on which the author communicates very valuable and novel views on the formation of mineral springs.

In the first chapter, on the *composition* of mineral and thermal springs, Dr Gairdner gives a most minute, elaborate, and accurate view of their chemical constitution, of the ingredients which they generally contain, and of the mode in which they are combined.

In the second chapter, devoted to the *position* of mineral and thermal springs, he gives a very interesting account of the actual position, geographical and topographical, and the geological relations of mineral and thermal springs, and of the rocky depositions which they occasionally create.

The third chapter, on the *origin* of these springs, contains a very full and elaborate view of all the theories which have been proposed, and all the facts which have been collected illustrative of their nature and origin. Some of these views are so ingenious, and at the same time show so happy applications of the principles of geological and chemical science, that we believe it will afford no less interest to our readers than it has done to us, to subjoin some of them in the language of the author

The following observations on the causes of the temperature of mineral springs deserve attention.

"In the preceding chapter, we have seen the frequent, indeed almost constant, occurrence of thermal waters in the more or less immediate vicinity of rocks which most geologists now concur in tracing to a formerly existing volcanic action, when they cannot be associated directly with active volcanic processes. In such cases, it is true, every thing at the surface bespeaks repose and tranquillity,—would seem to indicate that if, at a former period, such subterranean fires did really exist, they have been wholly extinct for centuries. Such an idea, however, is founded upon a very partial view of the phenomena in question. In many cases, cannot we trace the connecting link between these appearances, and the more obvious phenomena of active volcanism? Von Buch and Scrope have clearly shown that a new volcano very seldom makes its eruption across secondary rocks; but this event almost invariably happens in those bearing undoubted marks of a previously existing igneous agency, such as basalt or trachyte, or in granite and its congenerous species. We are, therefore, constrained to admit the intimate connection between these phenomena, and that at a greater or less depth, these ancient volcanic rocks retain their fluid state, or are in communication with the focus of modern volcanic agency, by fissures and rents in the crust of the globe, thereby furnishing an obvious and inexhaustible supply of caloric to the hot springs in their neighbourhood. On theoretical grounds, we might be led to infer the existence of an intense heat beneath these masses. The whole tribe of basalts, clinkstones, and trachytes, are well known to be very bad conductors of caloric ever since the observations of Dolomieu. V. Hoff (Bemerkungen über Karlsbad, p. 33, 1825,) maintains that the reverse must be the case, in consequence of the compactness and density that must be possessed by the interior strata of the earth, from their great specific gravity. But the well known observations of Monticelli and Covelli, (Storia dei Fenomeni del Vesuvio.) who found, on the 15th January 1822, a layer of snow remain unmelted on Vesuvius to the depth of a foot and a half, after an eruption had continued for two days; and on another occasion were able, without inconvenience, to keep the naked hand in contact with the margin of a lava stream, the centre of which was still in a red hot fluid state;—are sufficient to show the very bad conducting power of these materials. When we reflect, too, on the enormous heat which these substances must have once possessed, and on the magnitude of the masses which were once in a fluid state, it is not at all unlikely or difficult to conceive, that though they have been subjected to the radiation, or have rather been the conductors of subterranean caloric for at least 6000 years, these rocky masses still retain, at no great depth beneath the earth's surface, the heat originally generated by primeval volcanism, although all active operations should have now ceased to exist.

"Although, from these considerations, it is quite possible that the heat of many thermal waters may be derived from long extinguished igneous masses, situated deep in the crust of the earth; for if they are of considerable magnitude, and at a great depth, the time which has elapsed since the establishment of the present order of things can be but a small portion of that which would be required for the entire cooling of the igneous focus; yet nothing prevents us supposing volcanic action to be still in full activity below hot springs, and viewing them, with V. Hoff, (Geschichte der Veränderungen der Erdoberfläche, ii. 89.) as products of the very same processes which produce volcanic eruptions and earthquakes. The connection which subsists on many occasions between them and earthquakes, (p. 210,) as well as the substances which chiefly enter into their composition being the same which are discharged from the craters of volcanoes, would seem to point at the same conclusion.

"On many occasions the temperature of springs undergoes a remarkable diminution as we recede from these rocks. This is the case in the Pyrenees (p. 187,) and the Pennine Alps (p. 192.) pp. 317–319.

It is highly probable that volcanic eruptions owe their origin to a very simple cause, to the elastic force of aqueous vapours, which propel upwards through deep fissures the fluid metals, alkalis, and earths, which consolidate into lava streams. That they are, as it were, intermittent springs of a peculiar class, by means of which the caloric of the interior of the earth makes its way into outer space. That but for the tendency of every eruption to terminate itself by the congelation of the lava within the crater, and the accumulation of ashes, sand, and slags, volcanoes would continue in a state of permanent eruption, or, to speak more correctly, would serve as the permanent spiracles for the unceasing discharge of aqueous vapour. After the cessation of an eruption, the volcano passes into a state of a solfatara, which is nothing else than the constant discharge of acid and aqueous vapours, or hot springs, from the now congealed mass of lava, or fissures in the strata through which it has passed in its way to the surface. This state of a solfatara may continue for centuries, either till the reaccumulation of vapour gives rise to another eruption, or till the gradual cooling of the fluid focus diminishes the discharge of vapour and acid gases. The solfatara of Pozzuoli has discharged vapours ever since the times of Strabo. The hot springs, however, in the vicinity may still continue after the extinction of the solfatara, provided the water continues to traverse its former channels, which are still heated by the proximity of the volcanic focus, and may thus be the only historical document of the former existence of a volcanic eruption. In time, the temperature, and also the mineral impregnation of these springs, must diminish, in consequence of the continual recession of the active focus, till at last they resemble ordinary springs, which manifest no signs of having been formerly connected with a volcano at all.

"If this is the history of warm springs, a gradual diminution in temperature and impregnation should be observable in the lapse of centuries. The constancy of their temperature might only arise from the excessive slowness of the cooling of their focus, from the causes above stated. Perhaps at some former epoch the water has been much hotter, but has gradually sunk to its present point. The time, however, which must have elapsed since they attained the boiling point, is enormous, if their rate of decrease has not been formerly more rapid than at present. But from the very bad conducting power of the walls, it is not improbable that the time which has elapsed bears to the diminution of temperature not an arithmetical, but something approaching to a geometrical progression. Becher found in 1770 the temperature of the Sprudel water 165° F., not more than what it is at present. And at Mont d'Or, the temperature of which is now 110°, there are the remains of a bath (the only one till 1819,) which show that these waters were used for bathing in the time of Julius Cæsar, about 2000 years ago.

"Now this is about the highest temperature which the human body is capable of sustaining, so that the water could hardly have diminished sensibly in temperature during this long period of years. But if the diminution is supposed not more than one-fourth of a degree of Fahrenheit in a century, the cooling would not be discoverable even in this time, although it might latterly fall to the mean temperature of the place. If the warmth of thermal springs depends upon chemical processes in the interior of the earth, it must be subject with these to material changes, agreeably to what we observe in active volcanoes.

"If there be any truth in these reflections, hot springs must be regarded as in fact true solfataras,—solfataras of an age anterior to all the historical records of our species, the remnants of a volcanism which raged at some period previous the disposition of the tertiary or diluvial formations. The undiminished activity of their emergence ever since they have been subjected to our observation, is not be wondered at. Have not Pozzuoli and the Phlegræan fields continued in the state of a solfatara for thousands of years? There is even evidence, as we have seen, for supposing the hot springs of Iceland, of Hungary, Italy, and many other countries to have formerly possessed a much greater activity, and to have played a no insignificant part in the geological changes which have modified the physiognomy of the globe;—nay more, that at a period no less certain, though it may be remote, the Geysers themselves will cease to be projected from its interior.

"Before concluding the subject of the warmth of springs, the question naturally suggests itself, that of the three sources which have been enumerated (p. 296,) what is to be considered as of most influence in any individual spring, or group of springs? It is sufficiently obvious that the caloric must be derived from one or other of these sources, but it is impossible to assign the share borne by each of them. Berzelius supposes that the tepid weakly saline, and slightly sulphureous springs which issue from granite, such as those in the Pyrenees, those of Baden in Switzerland, and also at Bath and Clifton in this country, may derive their warmth from the first cause, from the general subterranean heat, and have their origin at a great depth. It is probable, however, that all the causes co-operate with regard to most springs. The transition between springs which owe their temperature to active and to extinct volcanism, is obvious. And may not the existence of a general subterranean warmth set a limit to the cooling dependent upon extinct volcanism, and be one of the causes of the permanence in the tem-

> perature of many warm springs remote from active volcanoes?"—Pp. 319-322.

These views form not an inappropriate introduction to a subject considered in the next section,—*on the origin of the ingredients of mineral springs*,—viz. the source of the carbonic acid gas.

> "If, as there are many reasons for supposing, the quiet and comparatively peaceful exhalation of carbonic acid from springs, is only a modification of what we see in volcanoes bursting forth with great violence, and even separating the solid crust of the earth, this view gains much additional weight, because, in the way of calcination, it will necessarily be disengaged with far greater force than by the slower action of chemical affinities. Besides, it is a matter of extreme doubt whether limestone could possibly exist in contact with masses which must be at an extreme degree of heat, without immediately undergoing decomposition in the way of calcination, long before the action of other strictly chemical agents could possibly have time to permeate the mass.
>
> "Some philosophers have considered the experiments of Sir H. Davy and Mr Faraday on the capability of carbonic acid being reduced from the gaseous to the fluid state by high compression, as of much importance in explaining the origin of acidulous springs, supposing it as probable that the acid only assumed its gaseous form on reaching the surface of the earth. But, of whatever importance this may be in regard to the form in which it exists in the interior of the earth, it does not affect the question of the source from which it is originally derived.
>
> "Such, then, is the source of the carbonic acid of true acidulous springs. In some cold springs, however, it is probably a mere local product of the decomposition of organic or carbonaceous substances. Its quantity is then comparatively inconsiderable, and it is generally associated either with sulphuretted hydrogen or the oxide of iron. These springs rise in the vicinity of deposits of coal, from an alluvial soil, in marshes or other situations where vegetable matters are in a state of decomposition. In this case, it may be the product of a simple process of fermentation and putrefaction, or of the decomposing agency of sulphuric and sulphurous acids, derived from the iron-pyrites which are very commonly disseminated in these localities. In tracing, however, the source of the carbonic acid which may happen to rise from a marshy soil, it is important to ascertain the nature of the fundamental rock, whether it is a mere alluvial sand or clay, a brown coal or lignite deposit, or an older rock. From a neglect of this circumstance, many observers have been led into error, regarding the carbonic acid which is disengaged so copiously from the marshes in the north-west of Bohemia, referring it to the organic matters in a state of decomposition, whereas it has been distinctly ascertained to issue from fissures in the subjacent granites."—Pp. 330-332.

Dr Gairdner then proceeds to inquire into the origin of the *sulphurous acid*, *sulphuric acid*, and *sulphuretted hydrogen*, found in mineral springs, which he infers must result either from the union of sulphur with oxygen and hydrogen, or as an educt from some sulphuret, especially the sulphuret of iron. *Muriatic acid*, which is generally a product of volcanic origin, he infers, must be evolved from some muriate, perhaps the muriate of soda,—and not formed from the union of its elements. *Soda* he refers to decomposition of some of the volcanic rocks, such as clinkstone, obsidian, pitchstone, pearlstone, pumice or trachyte, all of which contain more or less of that alkali. *Potassa* may, in the same manner, he argues, be derived by decomposition, heat, or weathering from feldspathose rocks, in which it forms an abundant ingredient. The sources of lime and iron are obvious; and *lithion* may be procured in a similar manner from the decomposition of lepidolite.

We cannot, however, pretend to transfer to these pages even an inconsiderable part of the valuable matter with which this performance abounds. But we recommend its perusal in the strongest manner, not only to medical but to general readers, as a work which communicates in the smallest compass all the most accurate information, and all the most philosophical views on the natural history, chemical constitution, and medical effects of mineral and thermal springs.

ART. IX.—*On the Influence of Physical Agents on Life.* By W. F. EDWARDS, M. D. Translated from the French, by Dr HODGKIN and Dr FISHER. *To which are added, in the Appendix, some Observations on Electricity, by* Dr EDWARDS, M. POUILLET, and LUKE HOWARD, F. R. S.; *on Absorption, and the uses of the Spleen, by* Dr HODGKIN; *on the Microscopic Characters of the Animal Tissues and Fluids, by* J. J. LISTER, F. R. S. and Dr HODGKIN; *and some Notes to the Work of Dr Edwards.* 1832.

OF this work, when it first appeared in the original, an analysis was given in this Journal, so detailed as to supersede the necessity of future notice. The value of the work as a physiological treatise, containing the most extensive collection of exact facts in the functions of respiration, transpiration, and secretion, extant, has been universally admitted. That a work so necessary to the medical reader required to be translated into English, must be admitted by all who wish the diffusion of correct physiological knowledge among the great body of the profession.

That this undertaking has fallen to the lot of Dr Hodgkin, is a circumstance with which every one who knows the attainments and diligence of that gentleman will have reason to be pleased. Translation is generally regarded as a humble, though highly useful task. In introducing to the English reader a scientific work like the present, however, more than the mere art of translation is required; and unless the individual possess knowledge of the subject little less extensive than that of the author, he can never hope either to do justice to him, or to produce a work which can claim the confidence of the scientific world. Such qualifications, therefore, elevate the present undertaking greatly above that of the task of mere translation; and this is one reason why, on the present occasion, we adduce the example of Dr Hodgkin as one which reflects equal credit on the original author and his interpreter, and one which we should on all occasions like to see followed in the translation of works of science. The well known character of Dr Hodgkin as a zealous anatomist and pathologist, and a physician who studies to keep pace with the progress of science in all its departments, is a sufficient testimony of his competency for the duty of expounding the doctrines of Dr Edwards to the English readers.

To accomplish his duty in a creditable and useful manner, Dr Hodgkin has shown equal judgment and solicitude. He has studied, in such parts as admitted it, to abridge and condense the language and details of the original,—a task by no means easy, and requiring much judgment, since the form in which the author gives his statements and reasonings is already very condensed. With the view, further, of guarding against any misconception or misrepresentation, Dr Hodgkin has submitted the whole of his translation to the author himself, who has taken this opportunity of furnishing Dr Hodgkin with some additional information, which is given in an appendix. The tables, however, are suppressed as unnecessary in a translation.

The original, it may be remembered, contains an appendix or essay, by MM. Prevost and Dumas, on the connection of elictricity with the phenomena of animal life. To the translation of this memoir, Dr Hodgkin has subjoined some interesting observations on atmospheric electricity by Mr Luke Howard. In the same place Dr Hodgkin has, besides a republication of his own dissertation on absorption, and his essay on the uses of the spleen, given in a series of notes on the former subject a historical and critical view of the doctrine of absorption, and the facts and arguments illustrative of the nature and mechanism of that process; a short view of the doctrine of endosmose and exosmose, as established by Dutrochet; and a new and enlarged form of the microscopical observations by Mr Lister and himself, on the constitution of the animal fluids and tissues.

In short, this volume, which contains a great proportion of novel and useful physiological information, is particularly recommended to the medical reader, and cannot fail to have a place in the library of every inquisitive and intelligent physician.

PART III.

MEDICAL INTELLIGENCE.

Report on Cholera in the United States, by Dr **Lewis C. Beck.**—*Nature of the Disease:* That the disease which has recently prevailed in Quebec and Montreal is the same with that, which, under the names of Asiatic Cholera, Spasmodic Cholera, and Cholera Asphyxia, has desolated so many parts of Asia and Europe, does not seem to admit of a doubt. We have on this point the testimony of physicians who have had opportunities of making the comparison; and the descriptions of the Canadian cholera which have been published, so closely resemble those of the foreign one as not to be mistaken. That the disease which is prevailing at New York, Albany, and other parts of our State, is identical with Canadian cholera, is also sufficiently attested. Many of our intelligent physicians have visited the Canadas for the express purpose of inquiring into the nature and treatment of that disease, and have since pronounced the cases which have occurred here to be similar in every respect.

I offer these remarks, not that there is any dispute among medical men, but that the public may be better qualified to pronounce upon the facts hereafter to be stated concerning its mode of transmission or propagation.

But upon some other points connected with this subject, the medical men of our state differ, perhaps as widely, as those of other parts of the world where cholera has prevailed. Is the disease now so generally prevalent, a malignant form of the common cholera morbus of the country, or is it a distinct disease which has for the first time appeared among us? Is it justly entitled to the appellation of cholera morbus, or is it not more properly to be considered as a febrile disease? These are questions upon which our physicians are still divided. While I am far from supposing that these questions can be settled by the facts which I have collected, I cannot omit making a few suggestions concerning them.

It has generally been observed that when cholera first makes its appearance, physicians are inclined to consider it as nothing more than an anomalous or severe form of ordinary *cholera morbus*. But when the disease becomes more general, and when a number of cases are observed to present the same specific marks, this opinion is in most instances changed. Its remarkable features can then be more attentively studied, and what at first appeared to be accidental symptoms, are found to be constant and characteristic.

In order to judge correctly concerning the nature of this disease, we must consider cases of its most aggravated form, as constituting its specific type. It is in these alone that its genuine marks can be studied. The rice-water discharges, the excessive cramps, the cold and shrivelled extremities, the sharpened features, the livid spots, and the amazing rapidity with which the vital powers are destroyed, present a combination of symptoms which do not occur in any other form of disease. But these aggravated cases, pass, by almost imperceptible gradations, into those which might be considered as the mild cholera of the country. Thus one patient will present only the sharpened features, and another only the cold extremities, another slight vomiting and diarrhœa, &c. But all show in a greater or less degree the influence of some powerful and uncommon morbid affection. These affections are entirely too general and peculiar to have escaped the notice of physicians, had they been of common occurrence heretofore.

That the disease of which I am speaking is more nearly allied to a fever than to cholera morbus, appears to be, in some degree at least, supported by the following facts. In the most severe cases, which, as I have before remarked, are to be considered as constituting the genuine type of the disease, the vomiting and purging are by no means universal.—They seem to be rather the symptoms or evidences of some great disturbing cause, acting upon the system, than as the cause of the disturbance itself. The diarrhœa which in most cases precedes the violent attack may either be a part of the true disease, or by its being neglected, predisposes the system to its attack.

Another fact, which deserves to be noticed, is that an attack of severe cholera is often precisely similar to that of an intermittent or remittent fever. The patient is seized with a sense of languor and lassitude, pains in the head, back and limbs, coldness of the extremities, and even rigors; and, if not speedily relieved, collapse supervenes, and the result is fatal.

We are informed by Dr Nelson of Montreal, that for many months previous to the breaking out of the cholera in that city, the diseases all partook more or less of the typhoid character. Catarrhs are said to have been more lingering than usual, and even pleuritis ran into the typhoid state. Dr Burwell, an intelligent physician of Buffalo, gave me some of the particulars of a remarkable typhoid fever, which prevailed there to some extent during the months of April and May last. The same disease had previously made great ravages at Chippewa in Canada, where it was first supposed to be cholera, to which, indeed, it bore some resemblance. How far these remarks will apply to other places, where cholera is prevailing, I have no means of determining; but if I have not been misinformed, diseases of a typhoid character have been more frequent during the past year than they were formerly.

It has been observed by foreign physicians, that when the cholera has passed through a place, fevers of a typhoid type set in, which are often quite fatal. The same thing has been observed in Montreal, even during the existence of cholera, nor is the remark inapplicable to our own city.

These are facts which seem to me to favour the idea, that cholera is a form of fever, or at least possesses a febrile character; which, though in many cases strongly marked, is almost infinitely varied by the constitution, mode of life, &c. of the individual, and by various other local and general causes.

I am aware that this view is liable to some objections; but in a matter upon which so much obscurity still rests, I trust I shall be excused for adverting to the above facts, which may add something to our stock of knowledge on this subject.

Geographical March and mode of extension of the Disease on this Continent.—In conducting this important and interesting inquiry, I shall first present a brief view of the progress of the disease since its first appearance on this Continent; and then offer such conclusions concerning its mode of extension, as seem to be warranted by the facts. I should premise, however, that although I have been careful to consult the most authentic records which could be obtained, it is possible that there may still be trifling inaccuracies in some of the dates. These may at least, in part, be ascribed to the differences among medical men, concerning the true nature of the first cases, and the unwillingness of Boards of Health to report them under such circumstances.

June 8, 1832.—On this day the first case of cholera was reported to have occurred at Quebec, (Lower Canada,) where it continued to rage for several weeks.

June 9.—The first case reported at Montreal.—It was that of an emigrant on board the steam-boat Voyageur from Quebec. On the 10th, there was another case from the vessel. Same night several natives were taken ill. According to Dr Nelson several cases of cholera occurred in the early part of April, after which the disease disappeared and broke out again in a mild form about the 1st of June.—He states, that in many instances several in a family were attacked; but the clergy, physicians, and those who were in attendance on the sick, unless rendered susceptible by over-exertion, generally escaped.

June 11.—Disease broke out at La Prairie, nine miles from Montreal. From this date to the 27th, when it disappeared, there were 55 cases and 24 deaths.

June 12.—First case at St John's—to the 6th July, 59 cases, and 11 deaths.

June 13.—Three persons died of cholera at Fort Miller, the first of whom is said to have sickened on the 13th. They were emigrants who had left Quebec on the 8th, and Montreal on the 9th June. They were on board of a canal boat, and the whole party consisted of 35, all Welsh emigrants.—(*Dr Asa Fitch.*

On the same day, a case occurred at Plattsburgh. It was that of an emigrant who had left Montreal on the 8th of June, and arrived at Plattsburgh on the 9th. He had been much exposed to wet and cold, and had eaten voraciously shortly previous to the attack. Soon afterwards several other cases occurred among residents, who were not known to have had any communication with the first. Disease confined to a filthy part of the village, and to persons of irregular habits.—(*Dr Kane.*

A case at Burlington, Vt. an emigrant recently from Montreal. Afterwards two or three other cases among residents.—(*Dr Bronson.*

June 14.—Case on board of the steam-boat Phœnix on Lake Champlain; terminated fatally at Whitehall next day. The individual had been in Montreal a day or two previous, and had visited the hospitals; was very intemperate.—(*Dr W. M'Leod.*

June 15.—A case at Whitehall and another at Fort Ann, on the northern canal. The latter had been on board the boat which contained Welsh emigrants, 3 of whom died at Fort Miller, as above stated.—(*Drs Everet and Porter.*

June 16.—Cholera broke out in Prescott, Upper Canada.

June 18.—An emigrant was attacked with cholera at Mechanicsville, and died after an illness of 18 hours. He had left Montreal on the 11th of June, and died on the 16th.—(*Dr Tibbets.*

The same day an inhabitant of the village of Canadian French, in the vicinity of Ogdensburgh, was attacked with the disease, and subsequently, several cases occurred in various parts of the latter village.—(*Drs Smith and Sherman.*

June 19.—Diseases broke out at Berthier and La Chine, L. C.

June 20.—Brockville and Kingston, Upper Canada. In the latter there were from the 20th June, to 27th July, 165 cases, and 52 deaths.

June 21.—An emigrant recently from Quebec, was attacked with cholera at Rouse's Point, on Lake Champlain, and died the 2d day.—(*Drs Wood and Churchill.*

Same day the disease broke out at Cornwall, U. C. where several cases followed.

June 24.—Mouth of Chateaugay River—(12 deaths)—also at York, U. C where there subsequently occurred several cases.

June 26.—Cases reported at Port Hope, U. C. and at Erie, Penn. The latter were emigrants from Montreal.

June 27.—Cobourg, U. C.

June 28.—Bradford, U. C.

June 29.—Chambly, U. C.

June 30.—New York city. I believe the first decided cases were reported on this day, but in a communication recently made to Gov. Throop, by the special medical council, it is stated that suspicious cases appeared as early as the 24th. It soon became general over the whole city.

July 1.—First case appeared at Bellevue Alms House, 2 miles from New York.—(*Dr J. Bayley.*

July 3.—First case in Albany, a resident. Several of the earliest cases were among the intemperate, in various parts of the city. Afterwards others were attacked. The disease could not be traced to emigrants.

July 4.—A case at West Troy. I believe the patient was a canal boatman.

Same day the disease broke out on board the steam-boat Henry Clay, on Lake Erie, which left Buffalo on the 3d, with 400 U. S. troops. This detachment left New York on the 23d of June, and reached Albany on the 24th, and immediately took their departure for the West.

July 6.—Two persons who had been employed to communicate with the Henry Clay, were attacked with cholera at Detroit, Michigan Territory. Afterwards several cases occurred at that place, among residents and others; in all about 60 cases, and 30 deaths.

July 9.—A case at Kingston, Ulster Co., and about the same time at Newark, N. J. and Williamsburgh, N. J. the patients being persons recently arrived from New York.

July 11.—New-Haven, Conn. In a person from New York,—among the labourers, on the canal between Millstone and Griggstown, New Jersey.

A case occurred on the same day at Troy, which I have no doubt was one of genuine cholera, though not reported as such.

July 12.—A case at Schenectady. The individual had left Albany the day before.

Cases occurred at Rochester, Monroe Co. in persons who had recently arrived in a canal boat from Albany. Afterwards several persons in various parts of the village were attacked with the disease. Not confined to the intemperate, nor even generally among that class. Up to the 15th of August, there had been 243 cases, and 68 deaths.—(*Dr Ellwood.*

July 15.—The disease broke out at Buffalo, N. Y. The first case was that of a labourer on the canal, who had been engaged in rafting timber for three days previous, and was much exposed to the water, and intemperate in his habits. He had resided in Buffalo for some time. Up to the 30th, no cases had occurred among the recent emigrants. Several persons going from Buffalo to the adjoining towns were subsequently attacked with cholera; and it prevailed to some extent among the Indians on the Reservation.—(*Board of Health, and Drs Trowbridge, Marshall, and Burwell.*

July 17.—First case in the Sing-Sing Prison. The patient was found in the morning in a state of collapse, and died during the day. He had previously had diarrhœa. On the 18th, another case occurred, which also terminated fatally. On the 20th four fatal cases. From that time the disease increased rapidly, and on the 6th of August, there had been 236, of which 72 terminated fatally. Since that time, there have been several additional cases. The whole number of convicts in the prison at the time the cholera first made its appearance was 939. From the 1st to the 25th of June, 26 prisoners were admitted into the prison, from different parts of the state, and only one since that date, viz. on the 20th of July. None of these had been the subject of the disease. No person attached to the prison, has been in any place where cholera has prevailed, nor have any of them been attacked with it.

No case of cholera had occurred in the village before the disease appeared in the prison. But about the latter part of July, a person of intemperate habits was attacked with it there and died. Complaints of the bowels were prevalent.—(*Dr March.*

Same day a case occurred at Syracuse, a labourer.

July 18.—Nine cases were reported at Brooklyn. The persons were intemperate, and had been in New York. Since that time the disease has prevailed quite extensively at that place.

July 19.—A child was attacked with cholera at Lockport, Niagara Cy.; next the father of the child, both fatal. A few other cases were reported subsequently.

July 22.—On this or the next day, the disease broke out on board the canal boat *Western Barge* at Frankfort, eight miles east of Utica. This boat left Albany on the 20th July with fifty-six passengers, being English, Irish, and Swiss emigrants.—The first person attacked was the captain, who died after a short illness. The boat continued on, and when it arrived at Rochester, several others had died. Nine fatal cases in all.

July 24.—Cases occurred in the Poor-House at Johnstown, Montgomery county, and on the adjoining farm.

In reviewing this table, it will be observed that the disease has generally passed from place to place along the main channels of communication. Wherever it has prevailed to any extent, the infected city or village appears to become a centre from which the disease is communicated to different places in the vicinity. Thus, from Montreal and Quebec, as centres, it gradually spread into various parts of Canada, following the course of emigration. Cases also appeared on the line of our Northern Canal, and at different points on Lake Champlain. In most of the villages on the Canadian side of the St Lawrence, and of Lake Ontario, where the tide of emigration has been uninterrupted, the cholera has occurred; while on the American side, where, since the breaking out of the disease at Montreal, all communication with the Canadas has been stopped, not a case has been reported, except at Ogdensburgh, and one or two other points on the St Lawrence, where the intercourse could not be so completely interrupted.

Again, when the disease was once located at Albany, boatmen and others leaving the city were attacked in various places, both on the line of the canal and elsewhere; and it appeared to radiate from this as a centre. The same fact has also been observed at New York, from which, by travel, the disease has been communicated to cities and villages in the vicinity, and even at some distance.

These statements, which I believe do not admit of dispute, seem at first sight to favour the idea that cholera is contagious, or directly communicable from man to man. But upon a more careful review of them, I am satisfied that this conclusion cannot be admitted without much modification. I am induced to examine this point with the more care, because the opinion is quite prevalent in some parts of the state, that the disease is contagious—an opinion which has been strengthened by the facts above stated, and some of another kind to which I shall presently advert.—This opinion has in many instances been productive of great mischief, and there can be no doubt that many lives have been sacrificed in consequence of the fear of approaching cholera patients, which was its direct consequence.

That cholera is not contagious, in the same sense as small-pox, measles, &c. can be abundantly proved by a multitude of facts. It has been observed that in Quebec, Montreal, New York, Albany, Buffalo, and elsewhere, that physicians, nurses, and others, who were in constant attendance upon cholera patients, have suffered in a much less proportion than those who were not thus engaged. In Quebec I believe only two physicians died of the disease; in Montreal one; in New York five or six; in Albany not one. When it is recollected that in the places just mentioned, not less than a thousand physicians have visited patients ill with cholera, and that the deaths were in almost every instance of those, who, by their philanthropic efforts, had been rendered peculiarly susceptible to the attacks of the disease, its non-contagious nature certainly receives a powerful confirmation. Indeed it is the uniform testimony of those who have seen the disease in Asia, Europe, and America, that physicians, and those who have been in constant attendance upon the sick, have not suffered more in proportion than other persons.—These facts constantly occurring in places where cholera prevails, are too striking not to be noticed. And it is gratifying to be enabled to state, that the boldness displayed in many places by physicians, and by the members of the Board of Health, in attending the sick, and in providing for their wants, even when deserted by their relatives and friends, and their freedom from subsequent attacks of the disease, has had a great effect in changing the opinions of the people upon this point.

An idea is maintained in many places, and by many persons, that cholera can be communicated by the clothing of persons who have died of the disease. Several instances of this kind have been reported in the public prints. I have thus far failed in my endeavours to obtain authentic information on this point, and there is no evidence in my possession that the disease has been communicated in this way.—The cases of this kind which have been reported, may perhaps with more propriety be referred to other causes than that which is assigned. Still, however, prudence may require, especially in a crowded population, that the clothing of the persons who have died of the disease, should be destroyed, or at least properly ventilated and washed in a solution of the chlorides.

Another fact should be mentioned, which does not appear to be entirely explicable upon the supposition that cholera is contagious. Many places in the vicinity of those where cholera has prevailed, have continued free from the disease, though the communication has been uninterrupted. I have been informed that several villages in the vicinity of Montreal and Quebec escaped entirely. The same thing has been observed in the vicinity of this city and of New York. Indeed Albany is the only place in the county where the disease has existed, although there has been much intercourse with the villages in the interior.

It is stated by Dr Sherman, of Ogdensburgh, that from 100 to 150 boatmen, raftsmen and others, belonging to that village and town, have been in Quebec and Montreal, while the disease was raging in those places. They returned home, and not one of them has been attacked with the cholera, or any thing assimilating to it. It should be remarked, that in the navigation of the St Lawrence, none but the most hardy and temperate men are now employed.

But it is necessary that I should examine more minutely, the facts which have been presented, with regard to the progress of the disease, in order to determine whether they really favour the opinion, that it is contagious, or whether they can be explained in some other way.

Before proceeding to this examination, it is important to remark, that throughout the whole extent of country which I have visited, and, indeed, in almost all parts of the state, there has been a general tendency to diseases of the stomach and bowels.—Whether this state of things was caused wholly by what may be termed a general epidemic constitution of the air, or in part by the influence of fear, it is not important at present to determine. The fact is sufficiently attested by the statements of physicians in different parts of the state. Under these circumstances, persons were rendered peculiarly liable to attacks of cholera, and it required but slight exciting causes to produce it. Bearing this in mind, let us now follow out some individual cases, and see whether we can account for the extension and progress of the disease without the aid of contagion.—Without attempting to decide, whether the cholera originated in Montreal, or was introduced there by emigrants, although the weight of testimony is in favour of the former view—let us suppose, parties of persons exposed to the general predisposing causes in operation there, leaving that place and travelling in various directions. They are of different nations, having every variety of constitution, and accustomed to every diversity in mode of living, &c. One party of 35 or 40 persons, take passage in a canal boat at Whitehall, and after an absence of four or five days from Montreal, three of them, all advanced in life, and enfeebled by previous illness, are attacked with cholera, which speedily proves fatal. None of the rest are affected, although constantly in attendance upon the sick, and in other respects similarly exposed, so far as exciting causes are concerned. Other persons, leaving the same city, in different modes of conveyance, and in different circumstances, as to mode of living, &c. escape the disease. Facts similar to the above have also been witnessed on the western canal. The canal boat *Western Barge* left Albany on the 20th of July, with 56 passengers, being English, Irish and Swiss emigrants. The boat was said to have been very foul. At Frankfort, about eight miles east of Utica, the captain sickened and died of cholera. The boat continued on to Rochester, when the passengers were taken out, and properly provided for. The total number of deaths among the passengers and crew was nine. In another instance, the boat "Columbia," left Albany the latter part of July, with 50 or 60 emigrants. On her way to the west, the cholera broke out among them, and before the arrival of the boat at Syracuse, five or six persons were said to have died of the disease. To these I might add, that of another boat from Albany, which on its arrival at Canajoharie, on the 5th of this month, had several cases of cholera on board; and also a similar one mentioned by Dr Fitch, which happened on the northern canal, on the 23d of July, at Fort Miller.

These facts might be set down in favour of the theory, that a specific contagion had been imbibed at Montreal or Albany by the passengers and crew of these boats, which produced the disease, during their progress on the canals. But it should be remembered, that other boats laden with passengers of the same description, had been cleared from Albany and Whitehall, in which the disease did not appear.—The following facts, however, seem to me to afford conclusive evidence, that the breaking out of the cholera on board of these boats had no necessary connection with the circumstance of their having passed through places where the disease was prevailing. The detachment of United States troops, under the command of Col. Twiggs, left New York on the 23d of June, reached Albany on the 24th, and passing along the western canal, embarked on board the steamer *Henry Clay* at Buffalo, on the 3d of July, in number about 400. On the evening of the 4th, a soldier of intemperate habits, and who had been indisposed for several days, was seized with cholera, and died in nine hours. Another case occurred soon after. The boat proceeded to Fort Gratiot, and on the 8th of July, there had already been 20 deaths from the disease. The steamer *Sheldon Thomson*, left Buffalo, I believe, a day or two previous, with Gen. Scott and staff, and Col. Crane's detachment of 220 men, all apparently in health. When the boat arrived at Chicago, there were 80 cases of cholera on board.

These troops, it will be remarked, passed through New York and Albany before even a suspicious case of cholera was known to have existed in these cities. The appearance of the disease in the Alms House at Bellevue is of a similar character. This establishment is situated two miles from the city of New York. We are informed by Dr Jos. Bayley, in his report to the special medical council of New York, that the first case of malignant cholera within the precincts of this establishment was a pauper in the main building, who sickened on the 1st of July and died on the 2d. She had not been in New York for several years, and no person from town had become an inmate of this room, for three weeks or more. We all know to what an alarming extent the disease subsequently prevailed there. In the Alms House at Glen, and on the farm adjoining, eight cases of cholera occurred, from the 24th to the 29th of July, while the disease was not known to have existed in the village, previous to the first of these dates.—The occurrence of cholera in the Dutchess county Alms House, and in the prison at Sing-Sing, present instances of the same kind.

How shall we reconcile these apparently contradictory facts? The only general explanation that in my opinion can be offered is, that under the peculiar atmospheric constitution now so general, the disease may be brought out wherever a number of persons are crowded together for any length of time, especially when they are either filthy, badly fed or clothed, or intemperate. And I should also add, that the facts seem to warrant the conclusion, that the disease may be also excited by the effluvia given out by cholera patients, when other local causes favour its production. Upon this point, however, I shall presently offer my ideas more in detail.

While on this subject, I would suggest whether some legal provision is not necessary to prevent the crowding together of such numbers of emigrants on board of our canal boats. Being oftentimes in the most filthy state, and by their habits and exposures very liable to attacks of the disease, it only requires the additional condition of being crowded together for several days, to bring it out in all its fury. This is a matter of peculiar importance as it regards travelling and transportation on our canals, the amount of which must be materially diminished, as long as cases similar to those above noticed are occurring. Even their occasional repetition keeps up a state of alarm, inducing travellers to abandon that mode of conveyance, and masters and crews of boats to relinquish the employment from which they derive their support. In this way the interest of many individuals will be seriously affected, and the revenue derived from our canals in no small degree diminished.

Some cases of an appalling nature have been observed in various places where cholera has prevailed, and which have also been adverted to as evidence of the contagious character of the disease. The cases to which I refer are those of several members of a family, or inmates of a tenement, falling victims to its attacks. It is not to be concealed, that these are often of such a remarkable character, as when separately considered, to warrant the conclusion that the disease has passed from one individual to another by contagion. But it would be rash to adopt such a view without an attentive examination of all the attending circumstances. We have just seen that under a general predisposition to the disease, local causes tend to develope it in its most aggravated form, and to affect in this way many individuals nearly at the same time. In some instances the local cause is rendered manifest. Thus we are informed by Dr Caldwell, that a large proportion of the cases at Montreal occurred along the course of a creek which was in a very filthy condition. The inquiries of physicians in other places have led to similar results. Indeed, wherever the disease has prevailed with signal virulence in any particular part of a city or village, some stagnant pool, some filthy receptacle or sewer, or some other marked local cause of disease, has generally been detected.

Upon this point the remarks of Dr Hancock, in his valuable work on the

Laws of Pestilence, are so much to the purpose, although made in reference to the plague, that I cannot omit quoting them.

"We have," says he, "the analogy of other epidemic diseases which are generally allowed to be received without contagion; for supposing that where the plague seizes several in one family about the same time, it does not therefore follow that one infects another in rapid succession; for they may have been all subjected to the same general cause, whether air or contagious effluvia. And even when marked succession and intervals are observed, this does not increase the evidence; because we know that non-contagious as well as contagious diseases, operate much sooner upon some constitutions than upon others.

"Medical men often speak of epidemic and contagious diseases, as if their mode of invasion was so distinct, that they might be clearly known from each other; in short, as if a disease, which was owing to a peculiar state of the air or its vicissitudes, must therefore, of necessity, affect all persons at the same time, within certain limits, whilst a contagious disease should propagate itself only in succession. But, as I have stated before, every one must have observed, that diseases properly entitled to the term epidemic, as arising from a common cause, and independent of contagion, do not fall upon the multitude in this simultaneous manner. On the contrary, they select their objects at intervals, one after another, according to previous habits and predisposition; although the cause may be universally acting at the time.

"Therefore, neither simultaneous attack, nor successive, affords proof in itself of a contagious malady."—P. 159.

From all the facts which have now been stated, I think we are warranted in deducing the following general conclusions:

I. That cholera originated on this continent, and was not introduced from abroad. The history of the diseases which prevailed at Montreal previous to its breaking out there, and the fact that its introduction cannot be satisfactorily accounted for, appear to be almost conclusive on this point. In reading Dr Nelson's paper, we are struck with the facts which he relates in reference to this point, and which seem to show that there was a peculiar epidemic, or pestilential condition of the air at that place.

II. That this pestilential condition of the air, or at least the predisposition to cholera, whether produced by the state of the air, fear or other causes, prevailed very generally in those places where the disease afterwards occurred.

III. That with this general predisposition, whether caused by the peculiar state of the air, or otherwise, cholera may be engendered by,

1. Intemperance in eating and drinking, especially the latter. It is a striking fact, not peculiar to cholera, but noticed in the history of every pestilence which has desolated the world, that persons whose constitutions have been broken down by intemperance are among its first victims. In the case of the disease, which has prevailed among us, the evidences of this are too numerous and striking to be particularized. Indeed, in many places, a large proportion of the fatal cases have been among the intemperate. Intemperance in eating is oftentimes also attended with much danger. I witnessed a case at Whitehall, which was undoubtedly brought on by the eating of a large quantity of green peas. The disease is said to have broken out in the Dutchess county Alms House, immediately after the inmates had eaten immoderately of cucumbers and other vegetables. To these several other instances might be added.

2. Exhalations from decaying animal and vegetable matter. The disease is most commonly observed to commence in the most filthy parts of cities and villages, and in some instances to be confined to them. It also lingers longest in such localities.

3. Moisture—especially if accompanied with alternations of temperature. Many of the cases at Buffalo occurred on the flat. At Albany the disease in a particular neighbourhood has often been referable to damp cellars, and the same fact has been observed in other places. And I might add in confirmation of this suggestion, that the number of cases of cholera are usually increased immediately after rain. Exposure to night air, probably for the same reason, has also frequently been attended with danger.

4. A crowded population—especially if some or all the above causes are also in operation. This is perhaps one of the most marked of all the exciting causes of the disease. Thus it has broken out and raged with great virulence in many of our prisons, alms houses, canal and steam-boats containing a number of persons on board, and in those parts of our cities which contain the most crowded population.

5. The effluvia arising from the bodies of persons who are labouring under cholera, or who have died of the disease. On this point it is necessary that I should be more explicit than on the preceding. I have already stated that there does not appear to me to be any evidence that the disease can be communicated from one individual to another by any specific contagion emanating from the body or clothing of a person affected with it. Still I think there can be no doubt that the effluvia given out under those circumstances is to be ranked among the exciting causes, which, like the rest, produces its effects upon individuals exposed to it, if previously predisposed. It should also be observed that this exciting cause is generally combined with some of, and sometimes with all, the others. There are several facts which seem to me to prove, that, under certain circumstances, the disease may be produced in this way. But perhaps the most striking, and concerning which there can be no dispute, is the breaking out of the disease at Detroit. Whatever predisposition there may have been at that place, it is certain, that, previous to the arrival of the *Henry Clay*, there had been no cases of spasmodic cholera there. On the 6th of July, two persons from Detroit, who had been employed to communicate with this boat, were attacked with cholera, and after that several cases occurred at that place; in all, according to the most authentic accounts, 60, of which 30 proved fatal. In other places where this boat and the *Sheldon Thomson* stopped, the disease soon broke out, and raged to a greater or less extent. This class of facts is interesting, as showing that the disease is sometimes excited, at least in those who are predisposed by their habits, fear, &c. by the effluvia emanating from persons labouring under its effects. They would seem at once to contradict the mass of testimony in favour of the non-contagious nature of cholera, to which I have before adverted. But when we view this effluvia, whatever it may be, as merely one among a number of exciting causes, the apparent contradiction is at once removed. That the disease may originate spontaneously, and entirely independent of this effluvia, I think is certain; but that this may, under certain circumstances, excite the disease, appears to me to be no less true. I say under certain circumstances, for this cause seldom produces much effect, unless other exciting causes are conjoined—as filth, moisture, a crowded population, &c. This will explain why, in general, there is perfect safety in visiting patients labouring under cholera in clean and well-ventilated houses and hospitals, and the liability to attacks, in visiting those who are confined in filthy, crowded, and ill-ventilated apartments. Again, much depends upon the predisposition of the individual. A person of regular and temperate habits may visit a hovel where cholera is doing its work, with perfect impunity, while he who is intemperate, or whose constitution is broken down, would almost certainly contract the disease. It occurs to me that much of the discrepancy which exists with regard to the conta-

gious or non-contagious nature of cholera has arisen from a want of attention to these points.

6. Fear.—I notice this as another exciting cause of the disease; and although much has been said concerning its powerful influence, I am satisfied that its effects have not been overrated. Many cases have come to my knowledge, where the effect of fear has been most strikingly illustrated. It is generally, however, to be considered as a predisposing rather than as an exciting cause. From a most attentive examination of this point, I am persuaded that of all the causes which predispose the system to attacks of cholera, this is by far the most powerful—I had almost said the most general. This will not appear strange to those who have watched attentively the intimate connection between the mind and the body. It is quite certain that such a state of alarm as existed among the inhabitants of many of the places which I have visited, must have the most injurious effects upon their bodily health. An acquaintance with this fact, at once explains the reason why those who are fearless in the discharge of such duties, as are dictated by humanity, generally escape the disease, while the timid, under like circumstances, are almost certain to feel its influence. Hence also those who remain firmly at their posts, in most instances are safe, while those who ignobly desert are among the first victims.

Preventive Regulations.—1. It appears to be abundantly settled, that cholera cannot be kept out of a country by quarantine laws, however faithfully executed. To say nothing of the difficulty of establishing a perfect quarantine, we have the experience of all Europe, and I may add of America, that they have heretofore proved ineffectual. This must indeed be the case, if the general views which are entertained concerning the epidemic constitution of the air be correct, and if the cases of the indigenous occurrence of the disease are to be relied on. But I will not therefore assert that quarantine regulations are useless, even in reference to cholera. On the contrary, they may be of great benefit if directed to the complete cleansing of vessels, baggage, &c. More especially in those cases where a number of emigrants have been crowded together during a tedious and unpleasant voyage.

2. The crowding together of numbers of poor, ill-fed, and perhaps intemperate persons, should be strictly guarded against whenever the prevalence of cholera is apprehended, or during its actual existence. I have already suggested the propriety of some legal provision, with regard to the number of emigrants, who should be allowed to be transported in steam or canal boats. The facts on this subject seem to warrant the adoption of some decisive measures.

3. Nurses employed in hospitals, and other persons having intercourse with cholera patients, should, if possible, never be selected from the intemperate or the timid, or from those who are on other accounts especially predisposed to the disease. A trifling difference in expence should have no weight in a matter of such importance.

4. All the local causes which have been enumerated above should, as speedily as possible, be removed, and where the disease breaks out in a tenement containing a crowded population, especially if it is filthy, or if it is in the neighbourhood of an offensive pool, sewer, &c. the inmates should be removed to another location. In this way the ravages of the disease have often been suddenly and completely checked.

5. Although no one should hesitate visiting the abodes of the sick when duty calls, that prying curiosity which prompts some persons to visit patients labouring under this disease should be discountenanced. I am also constrained to add, that much injury is often done by the numbers of persons who frequently crowd into the chambers of the sick, One or two good nurses, regularly relieved, are more serviceable to the patient than a

number. Besides, during the prevalence of the epidemic, many of the cases assume a typhoid character, and in these fully as much is gained by rest and quiet as by the medicines employed. Indeed, it is never of service to have a number of persons in a sick room. I applaud the noble zeal which has prompted many of our citizens to seek out the haunts of misery and disease, and to administer to the wants of their wretched inmates; but I am also compelled to say that much injury has been done in the mode just mentioned. A good rule in such case, is never to enter a sick room unless our attentions or services are really required. The patient is fatigued and alarmed by the mere circumstance of seeing so many individuals moving around his chamber. Let the services of persons who undertake these offices of charity be rendered promptly and cheerfully, but discreetly.

6. I might add also, that, considering how powerful an exciting cause intemperance appears to be, whilst it is at all times the dictate of sound public policy to use every effort to stop its progress, and to control its influence, it is especially so during the prevalence of this disease. It should be remembered that intemperance not only increases the number of victims of the disease, but in this very way also increases the general alarm, and thus aggravates, not only the predisposing, but exciting causes.

Treatment of the Disease.—On this point I shall confine myself to a faithful summary of the views of the physicians with whom I have conferred, without pronouncing upon their correctness. But in order that these may be fully understood, it will be necessary briefly to advert to some of the peculiar modifications of the disease which have been observed in the different places which I have visited.

Although cholera in its worst form presents nearly the same characters in almost every place where it has appeared, yet the milder attacks of the disease have presented considerable variety. In most of the villages along the line of the Northern Canal, the general predisposition to cholera was manifested by derangements of the stomach and bowels, producing either vomiting or diarrhœa, or both. At Whitehall, these symptoms were often accompanied by a peculiar griping pain in the bowels. At Plattsburgh many persons complained of a sinking at the epigastrium, difficulty of respiration, a sense of weight in the pit of the stomach, lassitude, and general debility. Through the counties of Clinton, Franklin, and St Lawrence, cases of dysentery were common, especially among children, many of whom were said to have died of the disease. At the other places which I visited, although the epidemic generally prevailed, I could not learn that it was characterised by any marked peculiarity.

I should also observe, that where only a few cases of spasmodic cholera occurred in a town or village, the principles of treatment were of course drawn from what had been observed in them, and this will account for the apparent discrepancy in the views of different practitioners. We are also to bear in mind, that, as the epidemic seldom presents exactly the same characters in any two places, so it is also constantly undergoing changes in the same place. Hence a mode of practice which is successful at the commencement of an epidemic, may be quite the reverse when it is at its height, or on the decline. How absurd, then, is it to suppose that any particular medicine, or set of medicines, are *specifics* in this disease!

In the early stage of the disease, perhaps the majority of the physicians with whom I have conferred, are in favour of blood-letting, especially in those cases where the patient complains of that oppression and difficulty of respiration which is oftentimes so distressing. This practice has also been adopted in many of the severe cases. More dependence, however, is placed upon calomel, conjoined with minute portions of opium, and its use is perhaps more general than that of any other medicine. This is either given in large doses at once, or in smaller ones repeated at intervals of from half an

hour to two hours. If this produces the effect of changing the nature of the discharges, the patient is considered safe.—Should its effects be too powerful, they are controlled by small doses of opium.

When the cramps and spasms are the prominent symptoms, some physicians depend chiefly upon opium, ether, &c. given in large doses. This practice was successful in a few cases, which occurred at Fort Ann, when other means failed to check these alarming symptoms. But I have no idea that our physicians would depend either wholly, or in part, upon these articles in ordinary cases.

Some of the practitioners in this city, and elsewhere, place great reliance upon emetics conjoined with calomel, in a full dose. This, by the shock which it gives to the system, is supposed to unlock the biliary duct, and to induce a healthy action, even in those cases which are of the more severe character. The leading indication appears to be to change the nature of the discharges which are so peculiar and characteristic.

I have but few facts in favour of the purely stimulating mode of treating the disease. Indeed those physicians who at first seemed inclined to adopt it, have gradually changed their practice.

In most of the severe cases, mustard seed poultices, and dry heat are still employed, but doubts have been expressed, whether, after all, they are productive of much benefit. When, however, the extremities are cold, it seems to be so natural to endeavour to excite warmth by these or other similar modes, that it is probable this practice will not soon be discarded.

I have little to add upon the treatment in the collapsed state. Indeed, this still appears to baffle all the resources of medicine, and all the skill of the physician. At one time the injection of saline solutions into the veins appeared to promise something. But I believe the trials which have been made in this country have not thus far confirmed the favourable opinion which has been entertained of it by some foreign physicians.

I am aware that there is but little that is new in the remarks which have been offered concerning the treatment of this disease. But upon this, as upon the other points which I have attempted to discuss, I trust I shall at least receive the indulgence of those who know how much obscurity still rests upon all that relates to this extraordinary disease.

Reports of the numbers attacked and cut off at

NEW YORK.

Reports commenced July 2d 1832.

Population in 1830, 203,000.

	Cases.	Deaths reported.	Ditto by city inspector.
Week ending July 7,	135	56	56
14,	720	307	336
21,	1318	586	716
28,	1331	489	686
August 4,	697	255	383
11,	614	206	281
18,	507	163	222
25,	368	133	178
Four days ending August 29,	152	52	93
	5842	2237	2951
Remainder of the week to 1st September,			45
Week ending September 8th, -			201
Week ending September 15th, -			128

Ceased reporting August 29.

PHILADELPHIA.

Population about 173,000.

	Cases.	Deaths.
July 27 and 28, -	8	6
Week ending August 4,	181	67
11,	913	346
18,	682	214
25,	308	77
September 1,	148	30
	2240	740
Week ending September 8,		18

(Ceased reporting September 1st.)

Cholera.—QUEBEC.

Population say 27,000.

Deaths taken from the register kept by the clergy.

The disease commenced on the 8th June 1832.

Week ending June 15,	deaths	374
22,	-	716
29,	-	246
July 6,	-	169
13,	-	78
20,	-	56
27,	-	57
August 3,	-	63
10,	-	74
17,	-	127
24,	-	135
31,	-	94
September 1 and 2, 13 and 15,	-	28
		2217 deaths.

MONTREAL.

Population about 26,000.

Disease commenced 9th June 1832.

	Cases.	Deaths.
Week ending June 16,	1709	261
23,	1580	632
30,	234	156
July 7,	124	94
14,	75	61
21,	96	70
28,	160	131
August 4,	180	136
11,	88	101
18,	64	79
25,	48	68
September 1,	37	54
	4385	1843

Mr Gates, in a letter to the editor of the Albany Argus, dated 1st September, says, that the burials were,

From June 11 to August 24, in the Protestant ground,	1050
June 10 to September 1, in the Catholic ground,	1670
Suburbs, &c. and at St Anne's, -	100
	—2820

Albany.

Population 24,240.
First cases reported July 3d 1832.

	Cases.	Severe.	Deaths.
Week ending July 7,	31	(not distingushed.)	11
14,	144	51	41
21,	172	94	50
28,	194	121	74
August 4,	186	97	62
11,	133	69	50
18,	116	64	46
25,	120	81	50
31,	50	24	18
Deaths from September 1 to 8,		-	16
from September 8 to 15,		-	3
	1146	601	421

Rochester.

Population in 1830, 9269.
First case reported July 12th 1832.

	Cases.	Deaths.
Week ending July 15,	3	2
22,	—	—
29,	36	13
August 5,	65	17
12,	74	16
19,	121	34
26,	72	19
(8 days,) September 3,	18	6
	389	107

Influence of the Serum in changing the colour of the Blood. By Dr E. Turner.—We have more than once noticed the opinions of Dr Stevens regarding the causes of the arterialization of the blood, and more especially regarding the dark colour which the blood acquires in some diseases. A good deal of speculation and some unprofitable controversy has arisen on this subject, when the proper course would have been to have ascertained by direct experiment the accuracy or inaccuracy of the views of Dr Stevens. The first accurate experiments on this subject, and, so far as we know, almost the only ones, have been performed by Dr Turner, Professor of Chemistry in the London University; and the results are given in the new edition of his Elements just published. We give the passage in his own words.

" A new theory of arterialization has been lately advanced by Dr Stevens in his valuable treatise on the blood. According to that physician the colouring matter of the blood is naturally very dark, it is rendered still darker by acids, and it acquires a florid red tint from sea-salt, and generally from the neutral salts of the alkalies. The colour of arterial blood is ascribed by him to hematosine reddened by the salts of the serum, the venous character to the presumed presence of carbonic acid, which like other acids darkens hematosine, and the conversion of venous into arterial blood to the influence of the saline matter of the serum being restored by the separation of carbonic acid. The removal of this gas is ascribed to oxygen, which is said to draw out the carbonic acid by virtue of a '*latent power of attraction.*' Laying out of view the supposed latent attraction, as an unnecessary, not to say unphilosophical supposition, the views of Dr Stevens are founded on facts which are novel and important. Take a firm clot of venous blood, cut of a thin slice, and soak it for an hour or two in repeatedly renewed portions of distilled water: in proportion as the serum is thus washed away, the colour of the clot deepens, and when scarcely any serum remains, the colour by reflected light is quite black. In this state it may be exposed to the atmosphere, or a current of air may be blown upon it, without any change of tint whatever; whence it follows, that, when a clot of venous blood moistened with serum is made florid by the air, the presence of the serum is essential to the phenomenon. The serum is believed by Dr Stevens to contribute to this change by means of its saline matter; for when a dark clot of blood, which oxygen is unable to redden, is immersed in a pure solution of salt, it quickly acquires the crimson tint of arterial blood, and loses it again when the salt is abstracted by soaking in distilled water. The alternating tint of venous and arterial blood may thus be imitated by a solution of salt.

"Such are the principal facts noticed by Dr Stevens. Some observers seem inclined to dispute them; but they are admitted by Mr Prater in a late treatise on the blood which has just fallen into my hands, and in a careful repetition of the experiments I obtained similar results. In order, however, more fully to elucidate this point, the following experiment was performed. With the assistance of my friend and colleague, Mr Quain, I collected some perfectly florid blood from the femoral artery of a dog; and on the following day, when a firm coagulum had formed, several thin slices were cut from the clot with a sharp pen-knife, and the serum was removed from them by distilled water which had just before been briskly boiled and allowed to cool in a well-corked bottle. The water was gently poured on these slices, so that while the serum was dissolved, as little as possible of the colouring matter should be lost. After the water had been poured off and renewed four or five times, occupying in all about an hour, the moist slices were placed in a saucer at the side of the original clot, and both portions shown to several medical friends. They all without hesitation pronounced the unwashed clot to have the perfect appearance of arterial blood, and the washed slices to be as perfectly venous: the colour of the latter, in fact, was quite dark. On restoring one of the slices to the serum of the same blood, it shortly recovered its florid colour; and another slice, placed in a solution of bicarbonate of soda, instantly acquired a similar tint. In thus brightening a dark clot by a solution of salt or a bicarbonate, the colour is often still more florid than that of arterial blood; but the colours are exactly alike when the salt is duly diluted.

"I am at a loss to draw any other inference from the foregoing experiment than the following;—that the florid colour of arterial blood is *not* due to oxygen, but, as Dr Stevens affirms, to the saline matter of the serum. The arterial blood which was used had been duly *oxygenized*, as it is called, within the body of the animal, and should not in that state have lost its tint by mere removal of its serum. The change from venous to arterial blood appears, contrary to the received doctrine, to consist of two parts essentially distinct: one is a chemical change, essential to life, accompanied by the absorption of oxygen and evolution of carbonic acid; and the other depends on the saline matter of the blood, which gives a florid tint to the colouring matter after it has been modified by the action of oxygen. Such appears to be a fair inference from the facts above stated; but being drawn from very limited observations, it is offered with diffidence, and requires to be confirmed or modified by future researches."—Pp. 902—904.

After the modest and diffident terms in which Dr Turner here expresses himself, it is gratuitous in us to deliver any opinion on the subject. But we may remark, that here is an experiment pointed and decisive, which proves, that when the serum is removed from arterial blood,—that blood becomes dark, and acquires the venous appearance,—and when this dark blood is immersed in serum, or a solution of bicarbonate of soda, it resumes its bright red colour. So far it is impossible to question the influence of the serum and its saline impregnation. Whether the serum actually loses that saline impregnation in disease, is a matter of fact not yet ascertained. And whether, if this were proved to be fact, it is one which precedes disease or is a *cause*, or one which follows, or is an *effect*, or one which accompanies, or is merely a *concomitant* depending on a more general cause,—are points, neither of which have yet been determined.

Contribution to a Natural and Economical History of the Coco-Nut Tree. By HENRY MARSHALL, Esq.—Mr Marshall's contributions to the Natural Sciences, makes it matter of regret that he has not come oftener forward with the results of his observations on the productions of tropical climates; for, notwithstanding the numbers of our countrymen resident in our Indian colonies, and whose opportunities for obtaining correct information are amply abundant, the number of observers, or of those capable of communicating the results of their observation, are comparatively few. We are thus, for want perhaps of a preparatory knowledge in natural history, ignorant of many things connected with the native productions of Asia, deeply interesting as objects of commerce,—as articles of food or medicine. The species of *Rheum*, for instance, which furnishes the rhubarb of commerce, is not yet satisfactorily ascertained; and although the Chinese have for ages used a species of *Mylabris* as their blistering fly,—the cantharides perhaps of the ancients—it is only of late that it has been introduced to notice in Britain. Even the history of the cinnamon tree, and the mode of preparing a spice known in commerce from the earliest ages, was imperfectly known in Europe till Mr Marshall published the results of his observation in the 10th volume of the Annals of Philosophy. The present paper on the coconut tree, of which a short abstract follows, is a reprint, with considerable additions and corrections, of a memoir which originally appeared in the Wernerian Transactions. Of the value of Mr Marshall's papers more strictly professional, the readers of this Journal are well aware.

The coco-nut tree (*Cocos nucifera*) belongs to the natural family of Palms, and is arranged under the class *Monœcia*, order *Hexandria*, of Linnæus. In regard to the variety and utility of its products, it is the most interesting of the family. It is found in intertropical Asia, Australia, America, and Africa. Like all other equinoctial plants, the coco-nut tree becomes less luxuriant as it approaches the tropics. In the neighbourhood of Lucknow, which lies in N. lat. 26° 24′, though the tree grows, it does not produce fruit. Requiring for its perfection a mean temperature of 72° Fahr. the proper climate is from the equator to the 25th parallel of latitude, and in the equinoctial zone to an altitude of about 2900 feet;—thus occupying a zone of 25° of latitude on both sides of the equator, which includes nearly four-fifths of Africa, one-eighth of Asia, one-third of America, and excludes Europe.

The structure of the family of Palms is peculiar. Their general form is a cylindrical column crowned with a circular tuft of large leaves. Unlike the Dicotyledonous plants, which have under the bark concentric layers of annual growth and a canal of pith in the centre, the stem of the palm is formed of a mass of longitudinal fibres, placed without apparent order, and enveloped in medullary substance. The fibres and cells are largest in the centre, and more delicate and close as they approach the circumference. In habit and structure the palms resemble the ferns, in their blossom the grasses, and the asparagi in their mode of fructification.

The coco-nut tree grows to the height of from 60 to 110 feet, and is generally from one to two feet in thickness. From the structure of the tree there are no branches, but the stem is marked with parallel rings from the cicatrices of the fallen leaves, about two of which separate annually. The stem is crowned with a tuft of from twelve to fifteen leaves, twelve or fourteen feet long, composed of a double row of opposite sword-shaped leaflets, in length from three to four feet. The flower is axillary, proceeding from a large single-leaved pointed spathe, which always opens on the under surface. Each spike has towards its base one or two female flowers, the others being male. The male flowers have six stamens and the female three stigmas. The calyx has three divisions, and the corolla is formed of three petals. The drupe and nut are too well known to require description.

When coco-nuts are intended for seed they are placed close to one another with the holes uppermost, and covered with a small quantity of earth. In a short time the aqueous fluid is absorbed, and the cavity becomes filled with a spongy white substance. Through the largest hole the plumula appears, and sometimes along with it the radicles, which run downwards on the outside of the shell. The seedlings are allowed to remain in this state for about a year before they are transplanted. Holes of about two feet deep and from twenty-five to thirty feet assunder, are dug in the field intended for a coco-nut garden, and the young shoots put into them. Fruit is produced in five or six years, but the produce is rarely abundant before the eighth or ninth year. The coco continues to yield fruit for sixty or seventy years. In good soils, and in moist seasons, the tree blossoms every four or five weeks; hence there are generally fresh flowers and ripe nuts on the tree at the same time. There are from five to fifteen nuts in a bunch, and in good soils a tree may produce from eighty to a hundred nuts annually.

The economical uses of the coco-nut tree are important and various, and no single vegetable production in the countries which produce it equal the coco in value to the inhabitants. The slender roots are formed into baskets; the woody shell of the stem is used in the construction of huts; the reticulated substance formed at the base of the leaves is employed as a filter; and the leaves themselves form a very substantial covering or thatch for houses. Even whole houses, walls and roofs, except the mere frame-work, are frequently formed of coco leaves; and during the insurrection in the Kandyan country in 1818, almost all the sick soldiers were accommodated in hospitals of this construction, which are capable of protecting from the weather for upwards of an year.

In a domestic state elephants are fed chiefly upon coco-nut leaves, and this animal evinces much sagacity in separating the elastic woody fibre from the thinner margin of the leaf. The leaflets are sometimes used to write upon, and the instrument employed for this purpose is an iron stylus, similar perhaps to the stylus of the Romans and other ancient nations.

The flower and fruit of the coco, however, afford the most important products. By a particular manipulation the flower yields a rich saccharine juice, which is convertible into arrack or sugar. A man, in colloquial language called a "Toddy-drawer," cuts off the point of the spadix, and ties the stump firmly with a ligature. It is then daily beaten with a stick, to determine the sap to the wounded part. In a few days the juice begins to flow from the cut surface of the flower, and is carefully collected in an earthen vessel suspended from the spathe. A thin portion of the flower and spathe is sliced off daily, and the end of the stump bound up. A good healthy blossom will give from two to four English pints of sweet juice daily, and some will continue to yield juice for four or five weeks. When it is intended to draw juice from a "tope" or cluster of trees, the toddy-drawer connects the heads of a great number of trees by means of the stems of creeping plants, or with coir rope. He ascends a central tree by means of bands of a creeper placed at intervals, collects the fluid in a gourd, and conveys it to the ground with a line.

Toddy is the name given by the English to the sweet juices extracted from the different species of palm. When fresh drawn it is sweet, and has a peculiar flavour. In a half-fermented state it is much relished by some Europeans. When it has become by fermentation highly intoxicating, the European soldiers and the dissipated portion of the natives drink it freely.

Arrack may be distilled from the juice the same day it is drawn. The process of distillation is carried on in the maritime provinces of Ceylon in copper stills, but in the Kandyan provinces earthen vessels are chiefly employed. The toddy yields about one-eighth part of proof spirit. Arrack is issued to the soldiers in India as part of the established ration; and the Royal Navy are furnished with the same spirit in place of rum. Batavian arrack is made from a mixture of molasses 62 parts, toddy 3 parts, and rice 35 parts, and 100 parts yield 23½ of distilled proof arrack.

A kind of sugar named *jagery* (perhaps the sugar of the ancients) is made from the juice of the coco; it is also used as yeast by the bakers in Ceylon; and by allowing it to pass into the acetous fermentation an excellent vinegar is obtained.

The kernel of the coco-nut is eaten by the natives in various forms; and it has been said that the person who possesses a garden with twelve coco trees and two jack trees has no call to make any exertion. The oleaginous fluid used in making *curry* is from the coco-nut, and large quantities of oil are prepared by expression for exportation. In Ceylon this oil is universally used as a lamp oil, and in England it is now manufactured into candles which closely resemble those made of wax. Gas from coco-nut oil has been found superior to artificial light from any other substance.

Besides these products, the outer husk or fibrous pericarp of the nut is employed in the manufacture of *coir* yarns and cordage. The rind is prepared by soaking in water for several months and then beating it upon a stone with a heavy piece of wood. Coir cordage, when properly prepared, is pliable and smooth, strong and elastic, and is much used on all the coasts of India. It is almost the best material yet known for cables, on account of its elasticity and strength. Coir is also used to stuff mattrasses, saddles, &c. Sago is prepared from the cellular substance in the interstices of the stem of this and other species of palm.

On the effects of Blood-letting in the cold stage of Intermittent Fevers, By W. Twining, Esq.—Bleeding in the cold stage of Intermittent fever, the good effects of which in cutting short the disease were first pointed out in this Journal by Dr Mackintosh of Edinburgh, appears from the cases in the fifth volume of the Calcutta Transactions to have been practised in India with equal success. Mr Twining gives numerous detailed cases of the effects of this mode of practice, from which the following are selected.

" J. Hunter, aged 25, middle stature, light complexion, and muscular, was attacked with tertian intermittent on the 5th December 1828. He was purged freely, and took *Pulv. Cinchonæ* ʒii.—*Pulv. Rhei gr. x.* daily until the 10th without benefit. Was bled to 14 ounces in the cold stage of the fourth paroxysm on the 11th December. The vein was opened when he was shivering severely; the nails very livid; he had much pain in the loins, and a rapid pulse. The rigors soon ceased, and he had a slight hot stage for about half an hour. There was no return of the disease."

"——Bennet, aged 47, a stout-made man of dark complexion, 18 years in India, had ague on the 16th, 18th, 20th, and 22d November 1829, and came to hospital just before the paroxysm on the 22d, which was very severe. He was freely purged, and when the cold stage returned on the 24th he was bled to lb. i. The rigors were strong and fully formed; pulse rapid and weak, The cold stage was arrested in a few minutes, and he had very little fever or sweating after; has not had either ague or fever since."

Mr Twining has related 50 cases of venesection in the cold stage, all attended with similar results. But he remarks, that, however marked the relief may be, it does not supersede the employment of purgatives and other remedies, as may be indicated in particular cases. And he has met with no case which would lead him to suppose that there was any danger in bleeding at the commencement of the cold stage of intermittent fevers, to such extent as to relieve the more distressing symptoms. "In conclusion (says he) "I think it important to observe, that my friends who have bled the patients with their own hands, have almost invariably been successful, because the remedy was employed at the proper time—*the commencement of the rigor;* whereas those who have been satisfied to give an order, and trust to others to execute it, have occasionally found blood-letting unavailing; and this does not appear to me to have depended on any defect of the remedy, but on its employment at an improper period of the disease."—*Calcutta Transactions*, Vol. v.

Dr Mackenzie, in the 29th paper in the same volume, advocates the practice of bleeding in the cold stage of agues; but cautions against the indiscriminate use of this or any other remedial means, without attending at same time to the constitutional state of each patient, or to the local visceral diseases that may exist. With such precaution he has found the practice strikingly successful; but he remarks, that "where the cold stage of an intermittent is not distinctly marked, such a case is less favourable for exhibiting the advantages of blood-letting than where rigors form a prominent symptom."—Dr Mackenzie also states, that he should not consider blood-letting or quinine to have a fair trial, unless the state of the stomach and bowels of the patient had been carefully attended to.

Dr Mackenzie's paper is followed by two others, by Mr Dempster and Mr Griffiths, in which the practice of blood-letting in the cold stage of intermittents in natives of India is proved to be extremely beneficial.—*Calcutta Transactions*, Vol. v.

Dr Duncan's Essay on Diffuse Inflammation; the Thesis of Dr Dumbreck; and Mr Greig's Paper on Inflamed Veins, Calcutta Med. and Phys. Transactions.—We refrained from noticing in our account of the fifth volume of the Transactions of the Calcutta Medical and Physical Society, the paper of Mr J. Greig on inflammation of the veins, not only because it contains nothing new, but because it consists chiefly of certain materials already before the public. Many of the general statements are derived from the Inaugural Dissertation of Dr Dumbreck of this city, published in 1822. Of the three cases which are given in it, not only is the first one, that of Michael Docherty, given at p. 108 without the name, already published in the Thesis of Dr Dumbreck, but it corresponds *verbatim* with the report of that case in the Essay of Dr Duncan on Diffuse Inflammation, read on the 30th July 1823, to the Medico-Chirurgical Society of this place, and published in the first volume of their Transactions, (Case III. p. 483.) The second case given by Mr Greig at p. 122 of the Calcutta Transactions, that of Mary Macgregor, was also published in the essay of Dr Duncan, to whom it was communicated by Dr Dumbreck, and is the seventh of the series, (Edinburgh Medico-Chirurgical Transactions, Vol. i. p. 492.) The third case is the only one not already published; and this, we have good reason to know, is one which occurred in the Royal Infirmary of this place, and the notes of which are in the possession of Dr Dumbreck.

On this proceeding it is unnecessary to make any comment. The Medical and Physical Society must have been entirely unaware of the fact of previous publication; but the same apology cannot be pleaded for Mr Greig. It is difficult, if not impossible, to prevent any one from republishing cases already published; but if this is to be done, the sources from which the cases and opinions have been taken ought at least to be acknowledged. By neglecting to acknowledge this a double injury is committed, one to the public, who are led to believe that they are receiving new and original matter, when they are only getting, in a modified shape, facts and opinions already published; and another to the original author, who is assuredly entitled to whatever merit and reputation may result from the early communication of the facts, and of which he is thus most unjustly deprived.

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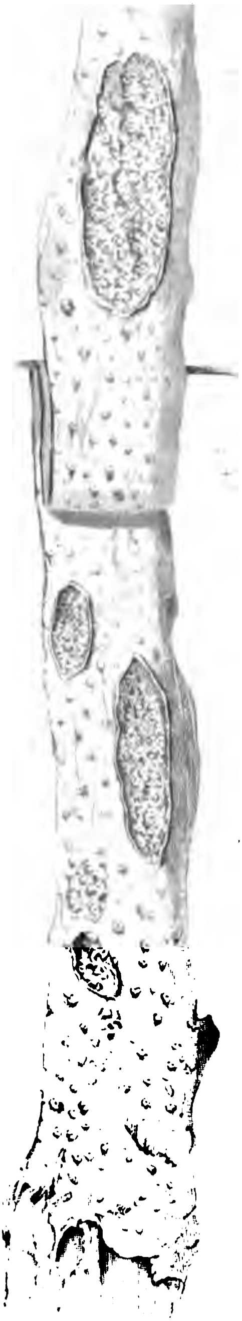
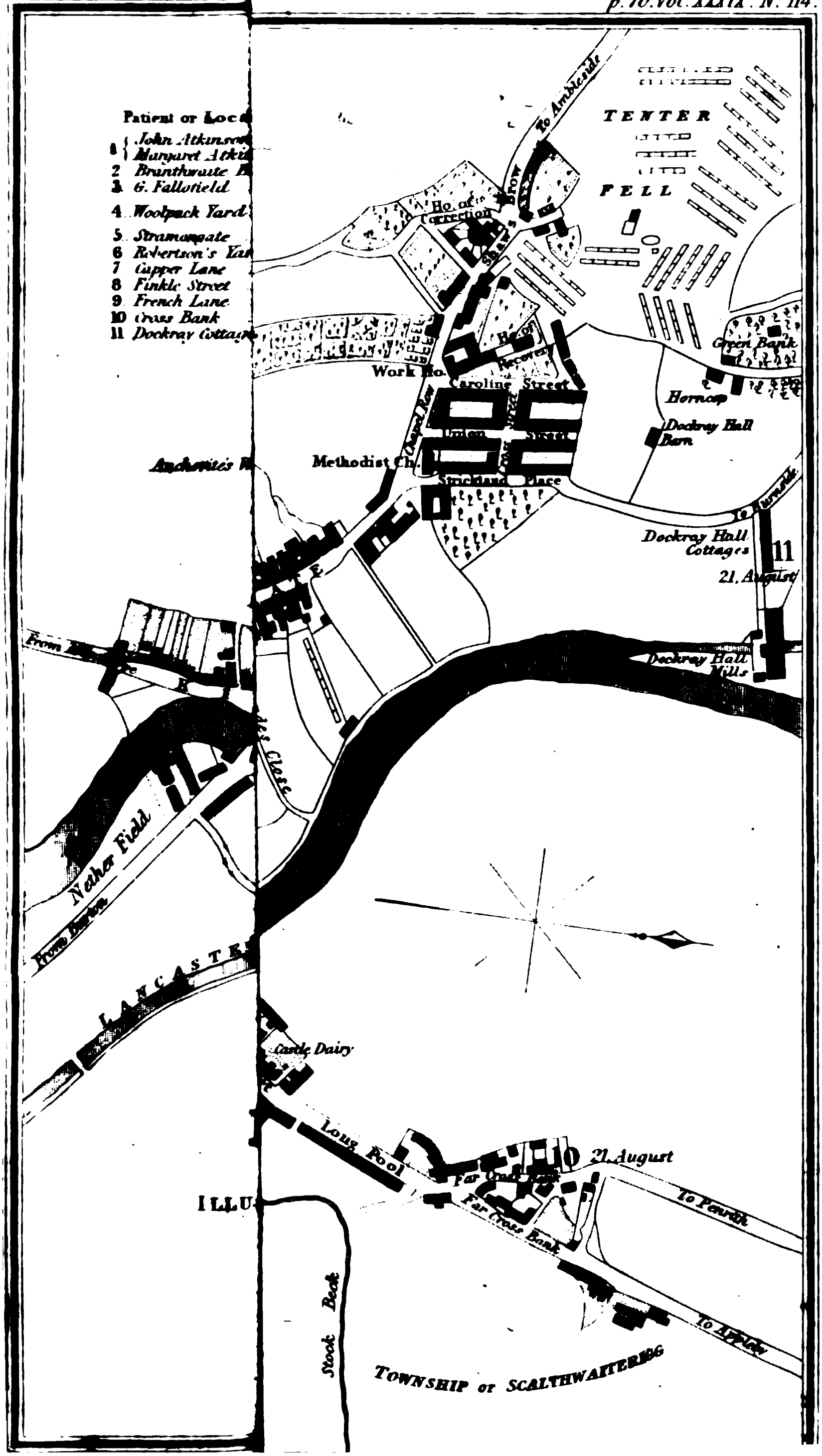
Fig. 2.



Edin^r Med. & Surg. Jour.

p. 70. Vol. XXXIX. N^o 114.

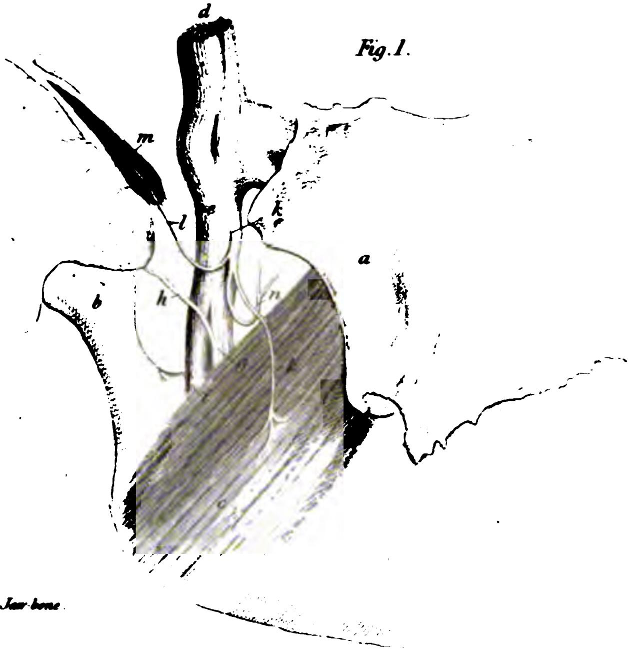


VIEWS ILLUSTRATIVE of PROFESSOR SCHLEMM'S PAPER on the NERVES.

Edinr. Med. & Surg. Jour.

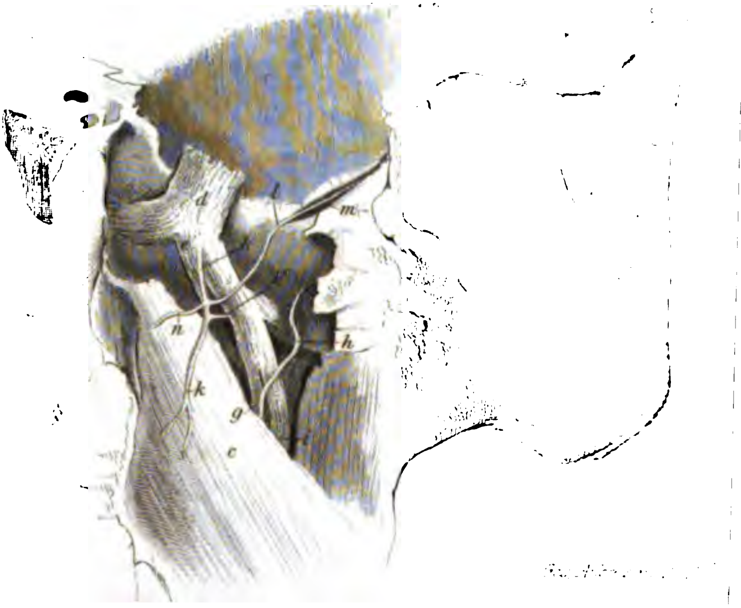
page 301. Vol. X

Fig. 1.



- a. Internal Pterygoid Plate.
- b. Condyle and cervix of the Lower Jaw-bone.
- c. Internal Pterygoid Muscle.
- d. Trunk of the 5th Pair of Nerves.
- e. 3d or inferior maxillary Branch of ditto.
- g. Gustatory Branch to the Tongue.
- h. Chorda Tympani joining it.
- i. Inferior Alveolar Branch.
- k k. Internal Pterygoid Nerve.
- k′ (Fig. 2) Additional root of ditto in this preparation.
- l. Branch to m, the Tensor Tympani Muscle.
- n. Branch to the Circumflexus Palati.

Fig. 2.



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PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*An Essay on the Comparative Merits of Artificial and Natural Classification, as applied to Diseases of the Skin.* By JOHN PAGET, M. D., formerly President of the Royal Medical Society.

§ I.—CLASSIFICATION AS APPLIED TO NATURAL HISTORY.

WHEN M. Alibert first proposed, as the subject of the prize essay at the Hospital of St Louis,* the comparative merits of the artificial and natural modes of classification, it occurred to me that it would be vain, and almost presumptuous, for any but a Frenchman to treat on a subject so peculiarly French. The country which gave birth to Jussieu, and Decandolle, Lamarck, Geoffroy St-Hilaire, and Blainville, and fostered the genius of Cuvier, may justly claim the distinction of having led all Europe in the march of natural science, and of having dictated the true laws by which she ought to be guided in its pursuit. In this department, it must be confessed, that France is without a rival. The talent of her philosophers, developed and encouraged by the extent and liberality of her scientific institutions, has placed her on a throne to which none can as yet contest the right.

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* This essay was written for a prize proposed by M. Le Baron Alibert at the Hospital of St Louis, August 15, 1832. It was to be written in any European language, to be finished within forty days, and to be delivered in with the name of the author, sealed. This essay was fortunate enough to succeed against several competitors, French, German, and Italian.

How then shall a stranger venture on ground so truly national was the first thought naturally suggested by the announcement of the title of this essay. A moment's consideration, however, was sufficient to convince me that it would be at least worth the trial, were it but to prove, that foreigners are not unmindful of their neighbours' improvements,—not unwilling to adopt them—and not forgetful to acknowledge the source whence they have derived them. It is true, that we are only beginning to follow the footsteps of our teachers; but we already perceive the truth of the principles they have laid down, and appreciate the advantages to be derived from their application.

Had further inducement been required, a sentiment of obligation for the kindness and liberality of the author of the prize, would afford a sufficient stimulus for every foreigner to use his best exertions to fulfil his wishes and intentions.

Origin and Progress of Natural and Artificial Classification.—In discussing the relative advantages of various kinds of classification, and of the propriety of their application to diseases of the skin, we cannot avoid the necessity of referring to Natural History. It is, in fact, to natural history that all classification owes its origin. The human mind, on entering on the study of a subject so vast in extent, comprising as it does a knowledge of the nature, habits, and formation of every natural object of which this earth is formed, or by which it is inhabited, seems to have been lost in the immensity of the space to be traversed, and to have sought some natural divisions, which, like the eras in history, might afford a resting-place for the imagination, and a point from which it might again set out on this never-ending pursuit. So forcibly has this feeling prevailed, strengthened indeed by that love of order which exerts so powerful an influence over the philosophic mind, that there is scarcely a single observer of nature, from Aristotle to Cuvier, but has attempted, by some species of arrangement, to facilitate the study of his favourite science. The true principles of classification were for ages unknown, and the foundations of the ancient arrangements were often placed on no surer basis than convenience in the disposition of a cabinet,—the alphabetical order of a list of names,—or the geographical relations of the objects it comprised. It was not till after the revival of literature that any advance was made in natural classification. Like every other science, it seems to have sunk with the fall of Rome, and to have remained buried as it were beneath that cloud of darkness and superstition which for so many centuries obscured the destinies of Europe.

In 1583, Cesalpinus attempted an arrangement of plants, according to the structure of their flowers and fruits. A century later, our countryman, Ray, advanced a step further, and applied the same principles to zoology, in his Synopsis on serpents and quadrupeds; but it was not till Linnæus arose that we had any thing really deserving the name of method in natural history. This great genius, embracing the whole natural world in the grasp of his intellect, divided and subdivided, collected and united, arranged and named every object with which he was acquainted; in short, laid the foundation of a method in natural history, which has served as the ground-work of all that later naturalists have accomplished.

Linnæus first conferred on natural history the inestimable boon of an accurate and appropriate terminology, without which no science can make any considerable advancement towards perfection. In naming such objects as were hitherto unknown or unnamed, he applied to them with peculiar felicity appellations expressive of some important or prominent character,—a rule which it would have been well had his followers been equally rigid in observing. The method or system of classification proposed by Linnæus was partly artificial, and, although possessing many excellencies, yet, in common with every other, founded on similar principles, it is liable to many serious objections. No one was more sensible of its imperfections than its author himself. "*Primum et ultimatum in botanice quæsitum est methodus naturalis*," are the words in which he leaves his opinion of the prior importance of a natural method; and his Natural Families will ever remain a testimony of his just appreciation of the true end and object of classification.

Before proceeding further, it may be well to define accurately the signification attached by naturalists to the terms empirical, artificial, and natural arrangements, by which the different species of classification are distinguished, and to the use of which we shall have frequent occasion to recur. By an empirical arrangement, is understood one derived from characters independent of, and foreign to, the objects it comprises. An alphabetical arrangement is of this kind. An artificial method or system, as it has been called, is one derived from characters inherent in the object, but having regard to only one part of its organization. such is in Botany the arrangement of Tournefort, drawn from the *Corolla*, or of Linnæus, from the organs of generation in plants. In a natural classification, to which the term *method* has been more peculiarly applied, reference is made to the sum of the most important and constant characters, to the assemblage of the organization studied in all its details.

Bernard de Jussieu may be said to have been the first who succeeded in submitting any part of nature to this third or natural method of classification. This original naturalist effected, after much study, an arrangement of the plants in the garden of the Trianon, according to their natural relations, and thus nearly finished the great work which Linnæus had left undone.

To Antoine Laurent de Jussieu, however, the nephew of the former, must be attributed the glory of having first laid down with philosophical precision the principles and laws of natural classification, and of having, by this means, placed it on a sure and certain basis. Commencing with the observation of individuals, and arriving at general conclusions only after innumerable particular examinations; joining those objects which presented natural affinities and relations, and separating those deficient in these respects; remarking closely the characters on which these resemblances depended, and the importance of the organs from which they were derived, Jussieu was enabled to lay down principles of classification which will probably remain in science as long as classification itself shall be an object of research. He has been ably seconded by many followers, among whom the name of Decandolle will be always distinguished by every lover of botany.

What Jussieu has done for botany, Cuvier, by following the same strictly Baconian method of investigation, has effected for zoology. Cuvier has not laboured singly in this great field of observation. Lamarck dedicated himself to the *Invertebrata*, particularly the lower orders; Latreille to the insects; Blainville to the zoophytes; and Geoffroy St-Hilaire to the philosophical anatomy of the whole animal kingdom. The light they have thrown on these branches of natural history, is as great as might have been anticipated from the combination of talent devoted to them.

I need scarcely enter into a detailed comparison of the different merits of natural and artificial methods, as applied to natural history. On this subject there is but one opinion; the very announcement even of the intention implied in their formation declares the relative utility of each. In the artificial, it is to afford an easy and direct means of discovering the name of any object which may present itself,—in other words, to furnish an index to Nature. The importance of such a means is great; to the young student, in a science of great extent, it is indispensable for the acquisition of the rudiments of knowledge. It presents, however, the inconvenience of placing in relation objects naturally separated, and of disuniting those most intimately related. The system of Linnæus informs us of the number of stamens and pistils in a plant,—of the number and form of the teeth of MAMMALIA,—of the relative position of the fins of fishes; but here the knowledge derivable from the system ceases.

A natural method, on the contrary, which is derived from the sum of the characters of affinity, those characters having regard to the constancy of appearance and importance of function of the organ from which they are taken, serves to mark, by the distribution of the objects, the relative rank they hold in the scale of creation,—the analogies they present with those which surround them,—and the distinctions by which they are separated from them; in short, "it considers the object under every possible point of view, and therefore makes one really know it."

If the naturalist desired to learn the name of an object only, indeed the system would have the advantage, since only one organ need be known to furnish the key to this knowledge; while in the other, the whole structure and history must have been previously well studied. In all subjects it is desirable to unite as closely as possible the convenience of the one with the solid utility of the other. In a science possessing very natural relations throughout all its parts, in which the same organs or characters, variously modified, are repeated throughout each family, this may generally be effected by selecting the most constant and essential character to form the basis of the system, and superadding it to the methodical arrangement founded on the sum of the characters. Jussieu has effected this object (for even Jussieu is a systematist) with so much success, that the Linnæan system might almost be dispensed with, even for the beginner.

It may perhaps be urged that this complication is unnecessary, since in botany many of the genera, as arranged artificially by Linnæus, are in the same relative position as in the natural classification of Jussieu; and in zoology, Cuvier has at last returned, as observed by M. Isidore G. St-Hilaire, to exactly the same order in his arrangement of *Mammalia*, as that originally proposed by Linnæus himself. Nor should this be wondered at; for such is the harmony of organization which reigns throughout creation,—such the successive and proportionate increase of developement,—such the sympathy of form in the different parts of one body, that, except in monstrosities, the state of one part of the body being given, the state of any other may be almost certainly predicated.*

This agreement between the system and the method, however remarkable in some instances, does not render methodical arrangement the less necessary. In reflecting on the unity and harmony of nature, we must not forget that she has also varieties and anomalies. It may be considered almost as an axiom, that absolute constancy is a thing unknown in natural history; from thence it necessarily follows, that any one character must be subject to irregularity, and therefore that any arrangement founded on one character, consequently any system, must be imperfect.

As natural history is only the means, and not the end of illustration, we shall quote one or two instances, first of accidental variety, and then of constant variety, if such an expression be not a contradiction in terms. The first is comparatively trifling, it merely serves to confuse the systematist in the determination of an unknown species; the second strikes at the very root of all systematic classification. It requires but a very young botanist to know how frequently the number of stamens vary in plants according to the soil or climate in which they may be found,—how often in some species there is more or less abortion of these organs, and how easy it is by cultivation to make them assume a character and structure quite foreign to their natural state. These may be considered as exceptions or accidental varieties, but in other cases the exception becomes the rule, the variety constant. In some genera, as the *Lychnis* and *Valeriana*, certain species are always deficient in the number of the organs of generation, and had Linnæus strictly adhered to his system, he would have been forced to break up these, two of his best marked genera. If such anomalies would operate frequently in dividing genera, it may easily be conceived how much more frequently it would oppose the formation of the larger groups, or orders and classes; and accordingly, we frequently find in the Linnæan system, that genera are altogether separated from those to which they are naturally allied by some unimportant variety in the number or disposition of their stamens or pistils.

In zoology, the varieties of organization are not less striking, and extend to whole families and collections of families. The *Invertebrata* generally, and especially the *Insecta* and *Entozoa*, present anomalies the most extraordinary; the latter, from some portions of their organization, would merit no inconsiderable rank in the animal kingdom, while from others they would justly be placed among the lowest of the zoophytes.

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* It was to the constancy of this harmony that Cuvier owed his great discovery, so useful in its application to another interesting branch of natural science; namely, that, from a single bone, nay, from a fragment of a bone, even in a fossil state, the family, genus, and frequently the species even of the animal to which this relic once belonged, might be accurately determined.

A protracted contemplation of nature under this point of view renders us almost forgetful of the great harmony which pervades the whole. To appreciate this vast expanse in its just proportions, we must regard it, as it were, from some lofty eminence, whence, overlooking the less inequalities of surface, which, on a near approach, become magnified to undue importance, we may obtain without obstruction a general and comprehensive view. Thus, in natural history, to see distinctly the unity of nature interrupted by anomaly, demands that, with the geologist, we should consider the successive formation of organized beings, as displayed in the relative ages of the various strata of which the earth's surface is composed: that, with the anatomist, we should observe the progressive developement of organs during their fœtal formation, and the changes through which they pass before they arrive at their perfect state; and finally, it demands that, with the analytic spirit of Geoffroy St-Hilaire, we should decompose and reduce to their simple elements the complicated structure of the whole, before we can comprehend the vast harmony of creation, before we can see nature as she really is,—Variety in Unity.

In making use of the term Natural Method, we have inquired how far any classification can strictly merit that name. "Je suis de l'opinion," observes M. Geoffroy St-Hilaire,* "qu'une méthode parfaite ne saurait exister; c'est une sorte de pierre philosophale dont la découverte est impossible." We believe the observation to be correct; for nature has only formed individuals. We must remember, however, that she has formed them in a certain order; some she has more or less approximated by certain resemblances and affinities; others she has separated by modifications and distinctions. To unite, however, in families, genera and species—to make abrupt stops, and lay down strict divisions, is without question purely the work of art; but the more perfectly this is accomplished on the principles of natural classification, the more nearly it approaches the course of nature herself. A natural method we consider as much a means of union as of separation,—as a mode of marking relations and affinities, no less than distinctions; and in proportion as it imitates the natural course of organization, shows how beautifully one type of formation glides into another, —how gradually the characteristic features of one class become softened in its extreme members, till they blend into harmony with those which follow, does it attain the true character of a natural method,—Division in Union.

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* Cours de l'Histoire Nat. des Mammifères, &c. par M. Geoffroy Saint-Hilaire, 1829, p. 28.

§ II.—PRINCIPLES OF NATURAL CLASSIFICATION, AND THEIR APPLICABILITY TO DISEASES OF THE SKIN.

Before we can discuss the comparative merits of natural and artificial arrangements of the diseases of the skin, a question of some difficulty must be answered. Is a natural method applicable to this subject? "Vouloir procéder en nosologie comme en histoire naturelle, c'est vouloir comparer à des états qui sont toujours des aberrations ou des perversions de la règle, des êtres constamment réguliers," * is the reply furnished by a modern pathologist. That there is not in diseases all that natural order which reigns in the animal or vegetable world,—that their relations are more distant, their affinities less evidently marked, we are ready to allow. But this would lead us to draw the contrary conclusion, that there is, for this very reason, more need of a method by which the relations and affinities which do exist may be brought more clearly into view; that, as no one character can be found sufficiently constant, it becomes the more incumbent on us to found our classification on the sum of the whole. To determine, however, accurately the possibility of this application to the subject in question, we must examine minutely the principles on which natural classification is founded, the conditions under which it is applicable, and the extent to which these conditions are fulfilled by the diseases of the skin.

Principles of Natural Classification.—The principles of natural classification must vary to a certain extent, according to the subjects to which they are applied. The only one in relation to which they have hitherto been laid down with any thing like precision is Botany. Decandolle, who has applied himself to this abstruse branch of science with the greatest success, has considered the whole theory of natural classification as comprised in the three following divisions.

1. The estimation of the relative importance which should be attached to organs, as compared with each other.

2. The knowledge of the circumstances which may deceive the observer relatively to the true nature of the organs.

3. The estimation of the importance which should be attributed to each of the points of view under which an organ can be considered.†

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* M. Breschet, in the Dict. de Mèdecine, Art. *Déviations.*

† Decandolle, Théorie Elémentaire de Botanique, 8vo, p. 78.

As these observations are general, and more or less applicable to almost every subject to which a natural method is adapted, we shall, as briefly as possible, consider their importance in relation to our present subject, and the modifications which they undergo, before they can be applied to other branches of natural science.

Before commencing the consideration of these principles, we premise, that, in applying them more generally than their author has done, we shall be obliged to break through a rule which naturalists have laid down, or rather we shall be forced to make their exception our rule. A character, it is said, should never be drawn from a function, but from the organ by which that function is effected, except in cases where that function cannot be appreciated. In nosology, it is the diseased function or symptom which must always furnish the character, since we are generally, not to say always, unable to appreciate the organic change by which it is produced. We can see, for instance, the difference between the syphilitic pustule and the eruption of variola; but the peculiar organic modifications on which these varieties depend are probably beyond our apprehension. We shall speak, for the sake of generalization, therefore, indifferently of the relative importance of characters, as of the organs or functions from which they are derived.

The importance of the first of the principles laid down by Decandolle is easily demonstrated. Natural classification frequently depends on the assemblage of the characters; but every character does not possess an equal value. On the contrary, a character is important in natural history, only in proportion as the organ from which it is derived is essential to the life of the individual, or the reproduction of the species. Now, as all the organs concerned in these acts are not equally indispensable for this performance, it becomes a matter of great interest to determine the relative importance of organs, and the laws by which it should be estimated. The great test applied by Jussieu to estimate the relative importance of a character, was its constancy. He found the value of a character in methodical arrangement to be in the exact ratio of its constancy; for he established, after innumerable examinations and comparisons, that the most constant characters were those drawn from the parts most essential to the formation of the plant, and, therefore, those which prevailed in the greatest number of plants.

It would be erroneous to conclude from this, as some have done, that universality is a fair test of importance. The organs of reproduction are common both to plants and animals; and yet, although botany and zoology may be considered only as two branches of the same science, these organs possess a very different relative importance, as to the characters they furnish in the one and in the other. In botany, the organs of reproduction serve for the basis of a system; in zoology, those of assimilation are always preferred. In other sciences, not quite so naturally connected as these, the error becomes still more obvious; for we find certain characters prevailing among a number of species and genera with such constancy, and drawn from such essential circumstances, that they are directly allowed to be of sufficient importance to constitute a natural family, which the very same characters in certain other genera are so inconstant, and so unessential, as not to suffice even for the establishment of a species.

In the diseases of the skin, if it be not premature to draw illustrations from a subject to which the principles are not yet proved applicable, we might quote the *Exanthemata* and *Psorodes*, as furnishing striking examples of this observation. In the former, the occurrence of a primary fever, and the succession at a certain period of an eruption on the skin, form constant and essential characters. In the latter they would be considered only as incidental and trifling coincidences.

This is, however, of no real weight as an objection to the application of natural arrangement to diseases of the skin, since it prevails, even in botany, in the establishment of the different genera of some families. In the *Umbelliferæ*, for example, the generic characters would be insufficient to distinguish the species, even of another family.

In reducing diseases, then, to a natural nosological arrangement, we should say, if we may venture a hasty conjecture on a question of such delicacy and importance, that the characters are important in proportion as they are constant in any one family, and in proportion as the symptoms from which they are derived regard the life of the individual,—as they extend their effects to other parts of the organization, or as they produce constitutional sympathies,—as they respect the formation of permanent organic changes, as they effect appreciable alteration of form and appearance, as they modify the principles of treatment, as they affect the sensations of the patient, and as they regard the causes of the disease.

The second part of the theory of classification, or the knowledge of the circumstances which might mislead the observer in regard to the true nature of the organs, is one of great importance. In natural history these circumstances principally regard excesses or deficiences in developement, either congenital, or formed at a later period of existence. They include, also, the changes of form and structure effected by climate, soil, nourish-

ment or culture, as well as the effects of disease, as far as they modify the nature or appearance of the plant or animal.

Applying this principle to our present subject, to which it is equally well adapted, we should enumerate, as the circumstances most likely to mislead the medical observer, principally such as regard the age, sex, and temperament of the individual affected,—the idiosyncrasies to which he might be liable,—the period of the disease, and the treatment to which it has been subjected, as well as many others with which it is absolutely essential that the medical naturalist should be intimately acquainted. To enumerate all the errors which would result from ignorance of them would be impossible. Suffice it to say, that anomalies would be every day mistaken for new species, and that the most important laws would be transgressed by the very facts which, when properly understood, are found to furnish the strongest arguments in their favour.

Decandolle's third and last division of the theory,—that respecting the relative importance of the points of view under which an organ (or character) is considered,—though including propositions of great value in classification, as applied to plants or animals, is not equally essential in its application to other subjects. The absolute or relative position of organs, for instance, which furnishes such important characters in botany, is a consideration quite inapplicable to mineralogy or nosology. We shall venture, therefore, to pass over this without further remark, and proceed to the next part of the inquiry.

After having briefly and imperfectly touched on the principles of natural classification, and some of the modifications to which they must be submitted to be rendered applicable to other sciences, it still remains for us to show under what conditions these principles are applicable. M. Isidore G. St-Hilaire has saved us the trouble of answering this question; for in his recent work, *Histoire des Anomalies de l'Organisation*, he has laid down three propositions, under which he considers all the necessary conditions included. These the author has applied to monstrosities, with what success we do not inquire; but they are drawn up in such general and abstract terms, that, *mutatis mutandis*, they may be made available for any other science to which it may be desirable to apply them. We shall adopt them, then, without hesitation, prompted as well by the authority on which they are given, as by the persuasion, that any subject fulfilling these conditions is in every respect adapted to a natural classification.

" 1. Those pathological modifications of the dermatic tissue, really meriting the name of diseases of the skin, are subject to certain and precise laws.

2. They are not merely local affections, but are usually attended by certain modifications in other parts of the economy, the one appearing to be the cause of the other, or at least to possess some necessary connection.

3. The same disease of the skin occurs in many individuals; so that there exists not merely an analogy between them, but as positive a similarity, as between any two individuals of the same species in the animal or vegetable kingdom.[*]

"Toutes les fois que se trouvent réunies les conditions exprimées par les trois propositions que je viens de vous rappeler, une méthode naturelle est possible et utile; et les formes et les principes des classifications zoologiques et botaniques peuvent et doivent etre appliqués."

It remains for us then only to prove that these conditions are fulfilled by the diseases of the skin.

The required conditions fulfilled by the Diseases of the Skin.—That the diseases of the skin, in common with every other disease, obey certain and precise laws, however difficult it may sometimes be to determine these laws, no one who has studied pathological phenomena with attention will be inclined to deny. That exceptions to these laws are of more frequent occurrence than in the other sciences to which natural classification has been applied, we are inclined to admit; but we cannot help suspecting that many circumstances, considered as exceptions, should be rather attributed to the ignorance of the observer than the error of nature. Since the cultivation of morbid anatomy has effected so much for medical science, how rarely do we hear of those miraculous maladies which used to astonish and puzzle our forefathers? How simple and regular do the most extraordinary phenomena of disease appear when investigated and explained by the scientific pathologist: how unnatural and incomprehensible is the commonest symptom when mystified by the imposing solemnity of the ignorant empiric? As knowledge advances, anomaly will decrease. Even now we know sufficient to establish the principle of regularity in disease. Who that has ever observed the active inflammation, the speedy suppuration, and the final reparation in a common *furunculus*: who that has watched the insidious attack of *carcinus*, its slow but certain course, and, if unchecked, its dreadful termination: who that has ever once seen the stages of *variola*,—its antecedent fever, its eruption on the fourth day, its maturation between the eighth and eleventh, its desiccation by the fourteenth (as Sydenham so accurately described it): who that has once observed these phenomena can deny that the diseases of the skin obey certain and fixed laws?

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[*] Histoire Générale et Particulière des Anomalies de l'Organisation, par M. Isidore Geoffroy Saint-Hilaire, 1832, Paris, Tome i. p. 104. These propositions run thus in the original:—"1. Les modifications organiques qui méritent réelement le nom de *monstruosités*, sont soumises à des lois certaines et précises. 2. Elles ne constituent pas des déviations purement locales, en ce sens que, chez les monstres, plusieurs anomalies sont ordinairement associées ensemble, l'une paraissant être la cause de l'autre, ou du moins leur existence étant liée d'une manière nécessaire. 3. La même monstruosité se reproduit ordinairement chez plusieurs individus, en sorte qu'il existe entre ceux-ci une analogie, et souvent même une ressemblance frappante, et qu'ils peuvent être considérés comme formés sur le méme type." It will be observed, that the third is the only one of these propositions in which we have, in any degree, altered the spirit of the original; and we have ventured to do so in that instance, because the diseases of the skin are fully adapted to this more restricted application, and because we have some doubts as to the propriety of classifying from analogy only. It must not be imagined, that, because we agree with the principle of these propositions, that we therefore agree with the author's application of them. Notwithstanding the elaborate, and, in many respects, excellent work of M. Isidore G. Saint-Hilaire, we still retain the opinion we formerly expressed on this subject; and later observations have only tended to confirm us in the same persuasion, that monsters cannot be arranged in a natural classification.—*Vide* Ed. Med. and Surg. Journal, Oct. 1831.

That the diseases of the skin are not merely local affections, is a circumstance of no less importance in their reduction to a natural arrangement. The point we need scarcely argue; the constitutional irritation which accompanies most of the *Eczemata*, the fever which precedes the *Exanthemata*, the morbid changes which give rise to the *Hæmatodes*, and the implication of the whole organization in the *Cancrodes*, the *Leprodes* and the *Aischrodes*, are proofs too striking to require further exemplification.

We must not, however, pass over this fact so slightly, in its application to the formation of a method in nosology, since the constitutional symptoms form some of the most constant and important characters. In the *Exanthemata*, the febrile movement which precedes the eruption may be said to form the essential characters of the group. In the *Aischrodès*, which are so naturally united, the cutaneous eruption assumes almost every form of which the tissue is capable; but the constitutional causes are the same; the constitutional effects liable to occur from mismanagement are the same; and, for all, the same principles of constitutional treatment appear to be applicable. To the man who despises all arrangement, if it be worth while to notice such an antagonist, this example might be adduced as a striking proof of the practical utility of a natural method.

The third and last proposition, that *the same diseases of the skin are repeated in many individuals*, seems equally capable of demonstration with either of the other two. It is possible that some men, who, by the constitution of their minds, appear incapacitated for the comprehension of relations and affinities, and whose sole attention is directed to minute and individual distinctions, might urge in opposition, that idiosyncrasies produce changes in the aspect of disease so considerable that the formation of species is impossible, and that of genera even doubtful.

In opposition to this, we refer to any candid botanist; and we would ask him, whether the varieties of climate, situation, soil, and cultivation, do not effect as striking and important modifications in the structure and form of vegetables, as idiosyncrasies in the characters of the diseases of the skin? How often is the tyro in botany misled by these varieties? Nay, the master himself may sometimes err. We must not be surprised, then, if the physician, who is much less accustomed to philosophical precision in his observations and deductions, should be equally liable to mistake. As the one may sometimes constitute a mountain specimen a new species, so will the other occasionally give different names to the same diseases as they occur in individuals of different constitutions, or as they are observed under different circumstances. These, however, are defects essential rather to classification itself than to the subject to which it may be applied.

§ III.—CLASSIFICATION AS APPLIED TO THE DISEASES OF THE SKIN.

Having now, we trust, said sufficient to prove the possibility and propriety of applying the principles of natural classification to the diseases of the skin, we shall proceed to compare the merits of the two methods as hitherto applied to this study. In speaking of artificial arrangement, we shall confine our observations entirely to that of Dr Willan; as we consider it by far the best, and the only one which can for a moment contest the palm with that of M. Alibert. As for those arrangements which divide these diseases into the chronic and acute, into those of the head and those of the body,—into those merely local and those depending on constitutional causes,—all these are equally faulty with that of Willan, as having regard to only one character, and far more so with respect to the selection of that character.

System of Willan. Character selected, and the objections to which it is obnoxious.—Plenck was the first to propose the division of diseases of the skin according to their external appearance; but to Willan the credit must be given of having reduced the system to a tangible and applicable form. Observing the various primitive forms of eruption to which the skin was liable,—remarking that it was one of the most prominent characters; that it admitted of great closeness of definition, and was easy of determination, requiring little previous knowledge for the application of it,—the English physician adopted this character, as Linnæus did that of the generative organs of plants, as the basis of his classification. His sole object seems to have been to furnish an index to cutaneous diseases; and he certainly effected this object, though imperfectly, to a far greater extent than had ever been previously accomplished. Brought up in the Linnean school, Willan had probably no idea of the purposes of classification beyond the one he proposed to himself, and for this purpose it is impossible he could have chosen any character so well adapted for it as the one he has done; indeed it almost reminds one of the facility of the great naturalist himself; and it is not improbable that this happy selection of character may retain in use the artificial method in diseases of the skin, as it undoubtedly has done in botany, long after the principles on which it was founded have been shown to be erroneous.

Many, however, as are the advantages possessed by the primitive form of eruption as the character of a system, we cannot close our eyes to the fact, that it is in itself too imperfect and irregular to be safely depended on. We have already said, and we believe it will be generally admitted, that no other single character pervading the whole class is more constant than the one selected by Dr Willan. If, therefore, we can show that this character is inconstant and inessential, we shall prove, as a necessary consequence, the insufficiency of this or any other artificial system for the classification of cutaneous diseases.

In the *first* place, *the eruption may change its nature and character in the course of its developement.* The most common instance of this change, is that in which a vesicle, by the augmentation of the inflammation, rendering the base hard and thickened, secretes a white and opaque, instead of a clear and colourless fluid, and thus becomes a real pustule. This is so common an occurrence, that it must have been observed by, and probably at first perplexed, almost every follower of the English system. The *papula* is not more constant to its original form. Sometimes, though not very frequently, it secretes a small quantity of serum, and assumes the appearance of a vesicle; sometimes it changes its form for that of a scale; indeed Bateman expressly observes, that in the three first of Willan's species of *Lichen*, the papular form is often lost, and they "occasionally pass into *Psoriasis*;"* while in the fourth species, *Lichen Agrius*, it is considered a distinctive mark, that "it is liable to terminate in a chronic pustular disease, the *Impetigo*." The rash or diffuse inflammation of the skin will often, as seen in *Erysipelas*, exhibit large *Bullæ*, in consequence of the intensity of the inflammation; so frequently indeed does this happen, that it has induced Willan to place this disease among the *Bullæ*, though his followers, as MM. Biett, Rayer, and others have, and certainly more correctly, according to the principles of artificial classification, brought it under their order *Exanthemata.* The scale which Willan has considered a primary form of eruption, has been described by others as only a secondary formation; from what we have observed ourselves, we should say it occurred in both of these ways, and perhaps most frequently primarily, though certainly not exclusively so. The tubercle is a form of eruption but ill defined, and not yet very well understood. Some of the diseases considered tubercular by Willan, are now called pustular by many of his followers; so that the form, if not inconstant, is at least exceedingly variable in this order.

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* A Practical Synopsis of Cutaneous Diseases, according to the arrangement of Dr Willan, by Thomas Bateman, 6th ed. 1824, p. 11 and 12. It may be as well to observe, that, in speaking of the arrangement of Willan, I always make use of his nomenclature; in all other cases that of M. Alibert is preferred.

Having thus shown that the character of the eruption itself is by no means constant, since it is liable to change its appearance during the progress of its developement, we shall proceed to point out some instances in which it is inessential, and cannot be properly applied as a character of classification, since two or more forms of eruption are often observed at the same time, without producing any important modification in the nature of the disease. *Scabies* is the disease in which this circumstance is most frequently observed. I recollect a very well-marked case in the Royal Infirmary of Edinburgh, at the time I occupied the situation of clinical clerk under the late Dr Duncan, in which different parts of the body presented distinctly at the same time *Papulæ*, pustules, and vesicles. Bateman, in his synopsis, places *Scabies* among the pustules, but observes, " this troublesome disease, which, from its affinity with the three orders of eruptive diseases, pustules, vesicles, and papulæ, almost bids defiance to artificial classification, is not characterized in a few words." In the work of MM. Cazenave and Schedel, it is placed among the vesicles, while others arrange it as papular. From having frequently seen it in the hospitals both of Dublin and Edinburgh, where it abounds so plentifully, I must confess that, if obliged to follow an artificial system, I should prefer the latter arrangement; and the strong resemblance which *Scabies* bears to *Prurigo*, an undoubtedly papular affection, would appear to confirm the opinion.

The genera *Ecxema* and *Impetigo* of Willan, though classed, the one as vesicular, and the other as pustular, so frequently present the two forms of eruption together, that it is in vain to attempt their distinction from this character alone. Bateman himself observes, that *Impetigo*, " like *Scabies* and *Eczema*, varies so much in its phenomena," that it is impossible to reduce it to a strictly artificial arrangement These imperfections were by no means unknown to the framer of this system. Bateman speaks of them repeatedly, but does not consider them of sufficient importance to prevent the adoption of it; though they occur so frequently as to offer perpetual difficulties to those who rigidly adhere to it.

Another error into which I think Willan and his followers have fallen, is that of having classed *Variola* among the pustules. The peculiar eruption by which *Variola*, *Vaccinia*, and probably to a certain extent also *Varicella*, are distinguished, is well known to be multilocular, composed of many cells, like the capsules of some plants, and, throughout the whole of its history, as well as anatomy, present many characters by which it is clearly separated from the true pustule.* The vulgar, from whom the learned physician may often gather valuable information, have always in England distinguished this form of eruption by the term *pock*, and the diseases exhibiting it by the names small-pock, cow-pock, and chicken or swine-pock. Dr Macartney, in his "Arrangement of Diseases of the Skin, in Natural Orders and Genera," followed in his lectures in the University of Dublin, has formed an order *Varicodes*, or pocks, characterized by the *Variæ* or pock, and including *Variola*, *Vaccinia*, and *Varicella*. These diseases, however, present so many important features in common with the rest of the *Exanthemata* of Alibert, that a separation from this character alone would scarcely be justifiable. The three diseases just mentioned, with the addition of the genus *Clavus*, (a disease of which we have never heard in England, and of which we believe our sheep to be quite free,) might not improperly be included in a subdivision of the natural group *Exanthemata*. But, to quit for a moment the critical part of this question, let us ask, how far does the system of Willan fulfil the intention of its author?—How far does it afford an easy and certain means of ascertaining the name of any of the objects it comprises? The experience of a tyro will furnish the best answer to the question. I commenced the study of diseases of the skin, a subject in which I was much interested, with the Synopsis of Bateman in my hands; yet, notwithstanding the attention bestowed on it, except in a particularly well-marked case, or one in which the disease was seen in its very commencement, I could rarely name it without the aid of more experienced eyes. Nor was my case singular; there are few students, of those who give themselves any trouble about the matter, that cannot complain of similar perplexities. Who is not aware of the many circumstances by which the original form of eruption may be destroyed, and its determination by this character rendered impracticable? Who has not been deceived by appearances, modified by constitutional peculiarities, previous treatment, friction of the clothes, scratching of the patient, the presence of filth, not to enumerate the varieties incidental to the form of eruption itself, or innumerable others, which, trifling as they may appear on paper, in practice it requires a well-accustomed and observant eye to detect?

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* The indefinite use of terms which has led to these errors cannot be too severely reprobated. Linnæus did more for botany from the accurate definition of the terms of the science than by any other means; and, had Willan done nothing more than lay down the meaning to be attached to the names expressing the primitive forms of eruption, he would still be considered one of the greatest benefactors dermatology has yet possessed. In the French school the abuse of the word *pustule* is still greater than with us. The "*Syphilide Pustulante*" seems to include every possible form of primary eruption; and the "*Pustule Muqueuse*," of which we hear so much, is still more indefinite; it is applied to any elevation of the skin which secretes a fluid. The use of this latter term seems to have arisen from a belief, not in the analogy merely, but in the absolute identity of dermatic tissue and mucous membrane, and the possibility of converting one into the other simply by a change of circumstances. The skin and mucous membrane may be said to hold the same relation to each other as plants do to animals. Where the two membranes approach each other, as at all the normal orifices, the nature of each is so modified, that it is impossible, as with the highest plants and lowest zoophytes, to say where the one ends and the other begins. But the mucous lining of the intestinal tube, with its naked surface, its mucous glands and follicles, its sensibility to certain stimuli, its peculiar powers of absorption and assimilation, its secretion of a fluid soluble in water, and its whole series of diseases, is as far from identical with the skin of the hands and arms, with its thick covering of epidermis, its shaggy coat of hair, its layer of membrane containing colouring matter, its delicate sense of touch, and its secretion of an oily sebaceous matter, as the higher orders of Mammalia from the lowest members of the vegetable series. A case recorded by Mr Earle sufficiently proves that exposure for no length of time will suffice to make true mucous membrane assume the appearance of skin. It is that of a case of congenital defect of the anterior parietes of the bladder and abdomen, where the posterior vesical surface is continuous with the skin of the abdomen, and is of course constantly exposed. The subject of this malformation, which, through the kindness of my friend Mr Ward, house-surgeon of St Bartholomews, I had lately an opportunity of examining, is now arriving at the age of puberty, but the mucous membrane still retains all its primitive and essential characters.—(*Vid. Lond. Med. and Surg. Journal, Feb.* 1832.)

Evils resulting from an Artificial Classification, as exemplified in that of Willan.—It now remains to be shown, that the classification of Dr Willan is not only imperfect in itself as a system, but that, from the manner in which the genera are arranged, the most important symptoms are often neglected and thrown into the shade, while trifling and unessential characters are brought prominently into view: that those diseases most strictly united are often the most widely separated; while those possessing no one essential character in common are placed in the closest proximity. These evils will be best shown by passing in review each separate order, and remarking on some of the most gross and prominent imperfections which each presents.

The first order of Willan is that of the *Papulæ*, including the genera *Strophulus*, *Lichen*, and *Prurigo*. The only inconvenience of much consequence here, is the separation of *Prurigo* at such a distance from *Scabies*, notwithstanding the many points of resemblance by which they approach each other.

The next order, the *Squamæ*, is not equally free from anomaly. *Icthyosis*, in many, or rather in all, its important characters, as its complication of all the tissues of the skin, its hereditary descent, its congenital origin, its usual duration for life, the absence of constitutional disorder, and even in its external appearance, is very widely separated from the other genera of this order, as *Ptyriasis*, *Psoriasis*, or *Lepra*. On the other hand, there are some diseases in this system far removed from the *Squamæ*, which, in fact, possess such very near resemblances to them, as to be with the greatest difficulty distinguished from them in their latter stages; some forms, for instance, of the *Eczema*, *Impetigo*, and *Lichen* of Willan, most of which M. Alibert has included under his very extensive group, *Serpigines*. The next order, *Exanthemata*, is perhaps one of the very greatest importance, and one in which the artificial system is most glaringly defective. The first, second, and fourth genera, *Rubeola*, *Scarlatina*, and *Roseola*, possess important characters in common, as the antecedent fever, and the regular periods of eruption and termination, and would belong properly to this group in a natural arrangement. The third, however, *Urticaria*, is distinguished from them by the causes which produce it, by its irregularity of continuance, and its very trifling importance. To these diseases follow *Purpura*,—a very peculiar affection, far removed from all the others of this order; and appearing to depend rather on a morbid state of the blood, than on disease of the dermatic * tissue itself. In a very remarkable case which occurred in Edinburgh under the care of Dr Graham in 1830, and which proved very speedily fatal, precisely the same appearances were observed on several parts of the mucous membrane of the intestinal canal, and, if my memory does not deceive me, on some of the serous membranes also, as on various parts of the surface of the body. For this reason, Dr Macartney has excluded it altogether from his arrangement, as a disease not proper to the skin, nor at all modified by its location there. Willan closes this order with *Erythema*,—a disease possessing no character in common with the others, except a diffused superficial redness on the surface.

Great as are the sins of commission in the order *Exanthemata*, those of omission are still greater. They are, however, too manifest to need much illustration. We have but to cast our eye over the natural group of M. Alibert to be at once convinced of the injury inflicted by such arbitrary divisions as those imposed by Willan. To place *Variola* in one order, *Varicella*,

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* I have adopted the word *Dermatic* (δερμα, δερματος,) from M. Alibert, in preference to the term *Dermoïd*, which was first introduced by Bichat, and properly ignifies, *like the skin*.

Vaccinia, and *Miliaria*,[*] in a second, and *Rubeola*, *Scarlatina*, and others, in a third, is to separate what nature has most closely joined,—to break assunder the nearest ties of relationship, to disunite harmony itself.

The fourth order of Willan is that of the *Bullæ*, including *Erysipelas*, *Pemphigus*, and *Pompholyx*. The character which has been chosen to distinguish the first of these diseases is particularly unhappy, as it is only an accidental one, and has not the slightest influence on the progress or termination of the complaint. This, however, can scarcely be received as a fair objection to artificial arrangement, since it is placed, in its present situation, in direct opposition to the principles of the system, according to which it ought most undoubtedly to occupy a place among the *Exanthemata* of Willan. *Pemphigus* we need not notice, as Bateman himself considers the disease here described under that name as more than doubtful. *Pompholyx* may therefore be considered to stand next to *Erysipelas*; and, if the object had been to place those affections in juxtaposition, which in their essential character presented the greatest contrast, it would be difficult to conceive an arrangement by which the intention could be more perfectly accomplished; the one is characterized by severe diffused inflammation, attended with redness, tumour, and pain, preceded or accompanied by fever, and occasionally exhibiting *Bullæ*; the other by the "eruption of *Bullæ* appearing without any inflammation round them, and without fever."[†]

The order *Pustulæ* includes some of the most important of the cutaneous diseases, which unfortunately, from the confused manner in which they are here thrown together, are very difficult to study and justly appreciate. The first genus is *Impetigo*,—a disease which it would be difficult enough to recognise, were we to depend entirely on the form of the eruption, for it has generally lost its pustular form and acquired that of a scab, before we see it. When thus far advanced it ordinarily presents precisely the same appearance, goes through the same changes, requires the same mode of cure, is in fact at this period the same disease as the vesicular *Eczema*. The peculiar local affection produced on the hands and arms of certain persons subject to the frequent contact of irritating substances, as the grocers, bricklayers, bakers, and, we may add, washerwomen, in whom we have seen the disease in a very obstinate form, is particularly remarked by Bateman as being impetiginous in some individuals, and eczematous in others. How arbitrary is the selection of a character so inconstant and so unimportant! In further illustration of the real similarity between these two affections, we may state, that we have remarked that the very same disease, which in our own country we have been accustomed to hear called *Impetigo*, receives in France, from the generality of those physicians who follow Willan's nomenclature, the title of *Eczema*.

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[*] The *Miliaria* we refer to is not the trifling symptomatic disease spoken of by Bateman, but the *Miliaria* as formerly described by Hamilton, and as recently seen by Alibert, Rayer, and others, with its antecedent fever, its regular eruption and desquamation, with, in short, all the characters of an exanthematous disease. *Vide* Tractatus de Febre Miliari. D. Hamilton, Geneva, 1716. Monographie des Dermatoses, par Alibert, 1832, 4to. Histoire de l'Epidemie de Suette Miliaire dans le depart. de l'Oise en 1821, par Rayer. 8vo.

[†] Bateman, op. cit. p. 139.

The next genus in this order is *Porrigo*, under which are included all the *Tineæ* of former authors. In few of these is the appearance of pustules ever perceptible; and in many, later investigations have distinctly proved the original form of the disease to be exceedingly different, and, as far as we are aware, peculiar to the hairy scalp.* The age at which the *tineæ* occur, their ordinary spontaneous cure at puberty, certain constitutional states with which they seem to be connected, and the peculiar part of the surface which they commonly and naturally occupy, are characters which separate them very widely from the other affections with which they find themselves in juxtaposition in the arrangement of the English school.

Ecthyma, *Variola*, and *Scabies*, are the remaining diseases, classed by Willan in this order,—the first, a pustular eruption, generally symptomatic, and of itself scarcely needing the aid of medicine, is placed by the side of one of the most severe and most fatal of our constitutional affections; and this again, followed by a disease merely local, never dangerous, but perhaps one of the most disagreeable to which man is subject, furnish evident proofs of the evils of artificial classification when applied to diseases of the skin.

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Notwithstanding all these modifications and improvements, the system of Willan still remains, and must ever remain,—imperfect; for the character on which it is founded is neither constant nor essential.

Method of M. Alibert; Objections to, considered.—It is an old observation, and not more trite than true, that it is much easier to play the critic than the author,—that it is a much simpler task to find out faults in an old system, than to form a new and a better one. The science of Dermatology, if we venture to elevate it to this rank, has been fortunate enough to find one capable and willing to execute this more difficult undertaking. M. Le Baron Alibert, occupying a situation perhaps the most favourable ever filled by any medical man for the observation of cutaneous diseases,—physician to a hospital dedicated to these affections in one of the largest cities of Europe, where are congregated individuals from every corner of the globe, furnished with the most expensive and invaluable means for their cure:*—Commanding all these advantages, and uniting to them that zeal and devotion to the cause, without which nothing great can ever be accomplished,—M. Alibert has more than fulfilled the just expectations which the profession could have formed, even from such unexampled opportunities. Inspired by the success which attended the efforts of his great countrymen, Jussieu and Cuvier, to reduce natural history to a classification drawn from the sum of the affinities and relations, the celebrated physician of St Louis has essayed the application of the same principles to the arrangement of diseases of the skin. Collecting together those genera which offered the greatest number of resemblances, he formed them into natural groups, under twelve of which he has been able to include all the diseases to which the dermatic tissue is subject.

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* It is to the baths we especially allude, of which the hospital St Louis contains

It would be impossible, in the short space of time allotted for this essay, to examine with accuracy each of these groups in detail. We could not undertake to criticise all the circumstances in which they might be thought defective, or to point out the many instances in which their excellencies are observable. Nothing but its actual employment and attentive study will show how beautifully it generally follows the course of nature herself,—how it joins together those diseases which offer the most natural resemblances,—how it separates those which approach each other by trifling and incidental characters,—how, by the position of intermediate genera, it softens down the features of one group, till it harmonizes with those which surround it,—it requires the eloquence of its author himself to do justice to its merit in these respects; and nothing less than his practical skill can properly indicate all its peculiar advantages.

It may easily be supposed, that before this great object, the establishment of natural groups could be accomplished, much previous labour must have been gone through. The determination of species and their separation from mere varieties,—the establishment of new genera and the correction of the old,—the reformation of the nomenclature and appropriation of significant terms, were all required before this could be attained.

In what manner, and to what extent, the author has succeeded in this attempt, we cannot pretend to discuss at any length. To examine each genus and species, and the grounds of their union and separation would be labour of months; for this we must refer to the work itself. To supply, in some degree, this deficiency, I have added a Supplement, from which the English reader may be able to form some opinion of the natural method.

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a large number of every possible kind. Some idea may be formed of the importance of such an agent, and the extent to which it is employed, when we state that in 1822 the number of baths administered to the out-patients of St Louis amounted to 127,752.

In the nomenclature, M. Alibert has differed in many respects from that of Willan, and we think generally with reason. In the first work * of M. Alibert, few but the vulgar names were applied to the diseases figured and described; the object was then only the establishment of species and genera, but those now used are, wherever it was possible, derived immediately from the Greek or Latin authorities. We do not pretend to so much critical knowledge of the fathers of medicine, as would enable us to say, whether the English or French master has most closely adhered to the original application of the terms employed; but we can say that M. Alibert has been particularly happy in appropriating names strikingly expressive of some prominent character of the disease, and therefore probably correspondent to their primitive acceptation. We feel assured, that the restoration of the word *lepra* to a group of diseases approaching at least more than any others of which we at present know, to that described by the Jewish writers, will be hailed as a boon as well by the biblical critic and the man of letters, as by the scientific physician.

We shall now proceed to notice some of the objections which may be urged to the application of a natural method to diseases of the skin, and examine the justice of some of the strictures we have already heard expressed on that of M. Alibert.

The most serious objection, and that most commonly urged to natural classification, in relation to diseases, that it is inapplicable, we shall take for granted that we have already overturned in the former part of this essay, at least in as far as it relates to that part of the subject now at issue. The objection which appears to us most weighty, is, the difficulty which a natural method presents to the beginner in his search for the name of a disease. Were dermatology a science of as great extent as botany, we should allow that this was a capital objection to the adoption of a natural method, as a means of acquiring the first rudiments of knowledge, supposing the student to be quite unaided in the attempt; since it would be impossible to form, as Jussieu has done in botany, a system which should be in harmony with the method. The reason of this is evident, the characters of most importance are not universal; the *Eczemata* are characterized by acute inflammation, pain, and consecutive fever, the *Dyschromata* by a simple change in the colouring matter of the skin, without pain or other symptom. A system, therefore, derived from one character could never harmonize with a method drawn from the sum of the whole. Fortunately, however, our subject is not so extensive as to demand such assistance. The *Dermatodes*, although taken by M. Alibert in the most comprehensive sense, and including every disease which at any time effects any important modification in the dermatic tissue, wherever it may commence or terminate,—taken even in this extended view, have been comprised in twelve groups, and about fifty genera. Were it necessary to read over the characteristics of each group, therefore, before the name or situation of a disease could be ascertained, the labour would not be very great. This inconvenience might be still farther diminished, and we trust will be ere long, by the formation of a synoptical table, containing the essential and distinguishing characters of each group, followed by the genera arranged in similar order, by which means the eye would rapidly seize the relations of the subject, and the determination of the group and genus would be found so easy and simple as to obviate any difficulty the beginner might find in his first attempt to employ this method in practice. To those who already know anything of the subject it would be unnecessary; for an arrangement derived from the most essential and constant characters must always be to them the most easy of application.

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* Description des Maladies de la Peau. Paris, in folio, 1806.

We have lately heard another objection: that in M. Alibert's method there are no bounds to the formation of orders or groups; that there is no reason why twenty should not be formed as well as twelve. From one acquainted with the true principles of natural classification this objection will only excite a smile; for he must know that precisely the same objection would apply to the method in botany or zoology; yet in both these sciences has it been applied with the greatest success. A group is formed on the same principle as a natural family, from a number of genera which possess in common at least one constant and important character, besides presenting certain general resemblances which render each more like every genus of the same family than any genus of any other family; in short, a general family likeness must prevail throughout the whole. The formation of natural groups therefore is not arbitrary. I do not say that the groups, as laid down by M. Alibert, are as yet all well established; it is scarcely possible that they should all be permanently fixed in the first essay; but when the principles on which they are determined are once well settled, it is only under peculiar circumstances that change can be required. This may happen, for instance, with respect to such genera, as, from their possessing little or no affinity with any others, have been grouped apart under the term *Heteromorphea*. Should further investigation lay open affinities between them and other well known affections, of course the two would be united; or should more extensive observation make us acquainted with other diseases of a somewhat similar nature to any of these, a new group would then undoubtedly be founded, in which all such would be included.

Such are as yet the only objections we have heard against the method of M. Alibert, and we cannot consider them of sufficient weight to overbalance its many advantages. We do not enter into the question of the formation of the genera, on which probably different opinions will be entertained; because we feel ourselves unequal to a task of such difficulty and importance, and also, because it is not necessarily connected with the determination of the present question, the application of the principles of natural classification to diseases of the skin.

Advantages resulting from the application of a Natural Method to Diseases of the Skin.—But what advantages can accrue from the use of the natural method? On its very surface rests this important advantage, that the more attention we devote to its improvement, the more we increase our knowledge of the subject. To effect this purpose every disease must be studied under all its various forms and modifications; its important characters must be noted, and separated from those which are no-ways essential to the disease; those which are constant must be distinguished from such as owe their origin only to incidental circumstances; in short, the assemblage must be studied in all its details. In a system, on the contrary, the more we dedicate our attention to its perfection the more we close our eyes to the real nature of the subject; we look to one, often trifling, character, to the exclusion of the many and important ones.

Another great advantage derivable from a natural method is, that by means of it we acquire real knowledge of a subject much more easily and certainly. The physician does not desire to know the name merely of any new disease which may present itself; this is only useful as it enables him to acquire information concerning it. He wants to know its origin, its cause, its seat, its general history, its probable consequences, that he may arrive at the great object of his labour,—the establishment of a safe and rational mode of cure. A great part of this information is at once furnished by the mere knowledge of the situation which a disease occupies in a natural arrangement. If we are told that a disease belongs to the *Cancrodes* or *Leprodes*, how immediately do we appreciate its danger, its obstinacy, its probable termination! If to the *Aischrodes*, how quickly does this information reveal its cause, its progress, the general principles of its treatment! If to the *Exanthemata*, how plainly are the leading characteristics of its history laid open before us! The first act of the mind after the observation of a new fact, is and *Varicella*. These diseases, however, present so many important features in common with the rest of the *Exanthemata* of Alibert, that a separation from this character alone would scarcely be justifiable. The three diseases just mentioned, with the addition of the genus *Clavus*, (a disease of which we have never heard in England, and of which we believe our sheep to be quite free,) might not improperly be included in a subdivision of the natural group *Exanthemata*. But, to quit for a moment the critical part of this question, let us ask, how far does the system of Willan fulfil the intention of its author?—How far does it afford an easy and certain means of ascertaining the name of any of the objects it comprises? The experience of a tyro will furnish the best answer to the question. I commenced the study of diseases of the skin, a subject in which I was much interested, with the Synopsis of Bateman in my hands; yet, notwithstanding the attention bestowed on it, except in a particularly well-marked case, or one in which the disease was seen in its very commencement, I could rarely name it without the aid of more experienced eyes. Nor was my case singular; there are few students, of those who give themselves any trouble about the matter, that cannot complain of similar perplexities. Who is not aware of the many circumstances by which the original form of eruption may be destroyed, and its determination by this character rendered impracticable? Who has not been deceived by appearances, modified by constitutional peculiarities, previous treatment, friction of the clothes, scratching of the patient, the presence of filth, not to enumerate the varieties incidental to the form of eruption itself, or innumerable others, which, trifling as they may appear on paper, in practice it requires a well-accustomed and observant eye to detect?

Evils resulting from an Artificial Classification, as exemplified in that of Willan.—It now remains to be shown, that the classification of Dr Willan is not only imperfect in itself as a system, but that, from the manner in which the genera are arranged, the most important symptoms are often neglected and thrown into the shade, while trifling and unessential characters are brought prominently into view: that those diseases most strictly united are often the most widely separated; while those possessing no one essential character in common are placed in the closest proximity. These evils will be best shown by passing in review each separate order, and remarking on some of the most gross and prominent imperfections which each presents.

The first order of Willan is that of the *Papulæ*, including the genera *Strophulus*, *Lichen*, and *Prurigo*. The only inconvenience of much consequence here, is the separation of *Prurigo* at such a distance from *Scabies*, notwithstanding the many points of resemblance by which they approach each other.

The next order, the *Squamæ*, is not equally free from anomaly. *Icthyosis*, in many, or rather in all, its important characters, as its complication of all the tissues of the skin, its hereditary descent, its congenital origin, its usual duration for life, the absence of constitutional disorder, and even in its external appearance, is very widely separated from the other genera of this order, as *Ptyriasis*, *Psoriasis*, or *Lepra*. On the other hand, there are some diseases in this system far removed from the *Squamæ*, which, in fact, possess such very near resemblances to them, as to be with the greatest difficulty distinguished from them in their latter stages; some forms, for instance, of the *Eczema*, *Impetigo*, and *Lichen* of Willan, most of which M. Alibert has included under his very extensive group, *Serpigines*. The next order, *Exanthemata*, is perhaps one of the very greatest importance, and one in which the artificial system is most glaringly defective. The first, second, and fourth genera, *Rubeola*, *Scarlatina*, and *Roseola*, possess important characters in common, as the antecedent fever, and the regular periods of eruption and termination, and would belong properly to this group in a natural arrangement. The third, however, *Urticaria*, is distinguished from them by the causes which produce it, by its irregularity of continuance, and its very trifling importance. To these diseases follow *Purpura*,—a very peculiar affection, far removed from all the others of this order; and appearing to depend rather on a morbid state of the blood, than on disease of the dermatic [*] tissue itself. In a very remarkable case which occurred in Edinburgh under the care of Dr Graham in 1830, and which proved very speedily fatal, precisely the same appearances were observed on several parts of the mucous membrane of the intestinal canal, and, if my memory does not deceive me, on some of the serous membranes also, as on various parts of the surface of the body. For this reason, Dr Macartney has excluded it altogether from his arrangement, as a disease not proper to the skin, nor at all modified by its location there. Willan closes this order with *Erythema*,—a disease possessing no character in common with the others, except a diffused superficial redness on the surface.

Great as are the sins of commission in the order *Exanthemata*, those of omission are still greater. They are, however, too manifest to need much illustration. We have but to cast our eye over the natural group of M. Alibert to be at once convinced of the injury inflicted by such arbitrary divisions as those imposed by Willan. To place *Variola* in one order, *Varicella*,

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[*] I have adopted the word *Dermatic* (δερμα, δερματος,) from M. Alibert, in preference to the term *Dermoïd*, which was first introduced by Bichat, and properly signifies, *like the skin*.

Vaccinia, and *Miliaria*, [*] in a second, and *Rubeola*, *Scarlatina*, and others, in a third, is to separate what nature has most closely joined,—to break assunder the nearest ties of relationship, to disunite harmony itself.

The fourth order of Willan is that of the *Bullæ*, including *Erysipelas*, *Pemphigus*, and *Pompholyx*. The character which has been chosen to distinguish the first of these diseases is particularly unhappy, as it is only an accidental one, and has not the slightest influence on the progress or termination of the complaint. This, however, can scarcely be received as a fair objection to artificial arrangement, since it is placed, in its present situation, in direct opposition to the principles of the system, according to which it ought most undoubtedly to occupy a place among the *Exanthemata* of Willan. *Pemphigus* we need not notice, as Bateman himself considers the disease here described under that name as more than doubtful. *Pompholyx* may therefore be considered to stand next to *Erysipelas*; and, if the object had been to place those affections in juxtaposition, which in their essential character presented the greatest contrast, it would be difficult to conceive an arrangement by which the intention could be more perfectly accomplished; the one is characterised by severe diffused inflammation, attended with redness, tumour, and pain, preceded or accompanied by fever, and occasionally exhibiting *Bullæ*; the other by the "eruption of *Bullæ* appearing without any inflammation round them, and without fever." [†]

The order *Pustulæ* includes some of the most important of the cutaneous diseases, which unfortunately, from the confused manner in which they are here thrown together, are very difficult to study and justly appreciate. The first genus is *Impetigo*,—a disease which it would be difficult enough to recognise, were we to depend entirely on the form of the eruption, for it has generally lost its pustular form and acquired that of a scab, before we see it. When thus far advanced it ordinarily presents precisely the same appearance, goes through the same changes, requires the same mode of cure, is in fact at this period the same disease as the vesicular *Eczema*. The peculiar local affection produced on the hands and arms of certain persons subject to the frequent contact of irritating substances, as the grocers, bricklayers, bakers, and, we may add, washerwomen, in whom we have seen the disease in a very obstinate form, is particularly remarked by Bateman as being impetiginous in some individuals, and eczematous in others. How arbitrary is the selection of a character so inconstant and so unimportant! In further illustration of the real similarity between these two affections, we may state, that we have remarked that the very same disease, which in our own country we have been accustomed to hear called *Impetigo*, receives in France, from the generality of those physicians who follow Willan's nomenclature, the title of *Eczema*.

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[*] The *Miliaria* we refer to is not the trifling symptomatic disease spoken of by Bateman, but the *Miliaria* as formerly described by Hamilton, and as recently seen by Alibert, Rayer, and others, with its antecedent fever, its regular eruption and desquamation, with, in short, all the characters of an exanthematous disease. *Vide* Tractatus de Febre Miliari. D. Hamilton, Geneva, 1715. Monographie des Dermatoses, par Alibert, 1832, 4to. Histoire de l'Epidemie de Suette Miliaire dans le depart. de l'Oise en 1821, par Rayer. 8vo.

[†] Bateman, op. cit. p. 139.

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In the modest and unpretending work of MM. Cazenave and Schedel, the systematic arrangement of Willan is much more strictly adhered to, the disposition of the genera is amended, and the classification very properly restricted to the diseases justly called cutaneous. As for those affections which cannot be fairly reduced to any one of Willan's orders, as *Lupus*, *Purpura*, and the *Syphilides*, these authors have very judiciously set them aside, and might fairly have called them an order of *Heteromorphes*.

Notwithstanding all these modifications and improvements, the system of Willan still remains, and must ever remain,—imperfect; for the character on which it is founded is neither constant nor essential.

Method of M. Alibert; Objections to, considered.—It is an old observation, and not more trite than true, that it is much easier to play the critic than the author,—that it is a much simpler task to find out faults in an old system, than to form a new and a better one. The science of Dermatology, if we venture to elevate it to this rank, has been fortunate enough to find one capable and willing to execute this more difficult undertaking. M. Le Baron Alibert, occupying a situation perhaps the most favourable ever filled by any medical man for the observation of cutaneous diseases,—physician to a hospital dedicated to these affections in one of the largest cities of Europe, where are congregated individuals from every corner of the globe, furnished with the most expensive and invaluable means for their cure:*—Commanding all these advantages, and uniting to them that zeal and devotion to the cause, without which nothing great can ever be accomplished,—M. Alibert has more than fulfilled the just expectations which the profession could have formed, even from such unexampled opportunities. Inspired by the success which attended the efforts of his great countrymen, Jussieu and Cuvier, to reduce natural history to a classification drawn from the sum of the affinities and relations, the celebrated physician of St Louis has essayed the application of the same principles to the arrangement of diseases of the skin. Collecting together those genera which offered the greatest number of resemblances, he formed them into natural groups, under twelve of which he has been able to include all the diseases to which the dermatic tissue is subject.

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* It is to the baths we especially allude, of which the hospital St Louis contains

It would be impossible, in the short space of time allotted for this essay, to examine with accuracy each of these groups in detail. We could not undertake to criticise all the circumstances in which they might be thought defective, or to point out the many instances in which their excellencies are observable. Nothing but its actual employment and attentive study will show how beautifully it generally follows the course of nature herself,—how it joins together those diseases which offer the most natural resemblances,—how it separates those which approach each other by trifling and incidental characters,—how, by the position of intermediate genera, it softens down the features of one group, till it harmonizes with those which surround it,—it requires the eloquence of its author himself to do justice to its merit in these respects; and nothing less than his practical skill can properly indicate all its peculiar advantages.

It may easily be supposed, that before this great object, the establishment of natural groups could be accomplished, much previous labour must have been gone through. The determination of species and their separation from mere varieties,—the establishment of new genera and the correction of the old,—the reformation of the nomenclature and appropriation of significant terms, were all required before this could be attained.

In what manner, and to what extent, the author has succeeded in this attempt, we cannot pretend to discuss at any length. To examine each genus and species, and the grounds of their union and separation would be labour of months; for this we must refer to the work itself. To supply, in some degree, this deficiency, I have added a Supplement, from which the English reader may be able to form some opinion of the natural method.

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a large number of every possible kind. Some idea may be formed of the importance of such an agent, and the extent to which it is employed, when we state that in 1822 the number of baths administered to the out-patients of St Louis amounted to 127,752.

In the nomenclature, M. Alibert has differed in many respects from that of Willan, and we think generally with reason. In the first work * of M. Alibert, few but the vulgar names were applied to the diseases figured and described; the object was then only the establishment of species and genera, but those now used are, wherever it was possible, derived immediately from the Greek or Latin authorities. We do not pretend to so much critical knowledge of the fathers of medicine, as would enable us to say, whether the English or French master has most closely adhered to the original application of the terms employed; but we can say that M. Alibert has been particularly happy in appropriating names strikingly expressive of some prominent character of the disease, and therefore probably correspondent to their primitive acceptation. We feel assured, that the restoration of the word *lepra* to a group of diseases approaching at least more than any others of which we at present know, to that described by the Jewish writers, will be hailed as a boon as well by the biblical critic and the man of letters, as by the scientific physician.

We shall now proceed to notice some of the objections which may be urged to the application of a natural method to diseases of the skin, and examine the justice of some of the strictures we have already heard expressed on that of M. Alibert.

The most serious objection, and that most commonly urged to natural classification, in relation to diseases, that it is inapplicable, we shall take for granted that we have already overturned in the former part of this essay, at least in as far as it relates to that part of the subject now at issue. The objection which appears to us most weighty, is, the difficulty which a natural method presents to the beginner in his search for the name of a disease. Were dermatology a science of as great extent as botany, we should allow that this was a capital objection to the adoption of a natural method, as a means of acquiring the first rudiments of knowledge, supposing the student to be quite unaided in the attempt; since it would be impossible to form, as Jussieu has done in botany, a system which should be in harmony with the method. The reason of this is evident, the characters of most importance are not universal; the *Ecxemata* are characterized by acute inflammation, pain, and consecutive fever, the *Dyschromata* by a simple change in the colouring matter of the skin, without pain or other symptom. A system, therefore, derived from one character could never harmonize with a method drawn from the sum of the whole. Fortunately, however, our subject is not so extensive as to demand such as-was prescribed. On the following day the symptoms were alleviated, and the patient went to bed about eleven, soon after which he was discovered to be insensible, and I was sent for. On arriving at an early hour of the 18th, matters were as follows. The patient was for a few minutes in a state of apparent sleep, from which he could not be roused, and immediately afterwards he raised his head, and partly his body, and breathed most laboriously, like one in a severe fit of spasmodic asthma. These states regularly alternated, the asthmatic symptoms continuing rather longer than the quiet (or apoplectic) state. The pulse was quick and feeble; the extremities cold; face not flushed; much tossing of the left leg and foot, but those of the opposite side were never moved; and upon any one raising the right arm, it fell as if powerless to the side, when the raising force was removed. The patient was speechless, and his mouth was slightly drawn to the left side. On the 19th, he was found as before, by Mr Proctor, surgeon, who at that time resided with me. On the 20th he was not essentially different, but he lay longer, as if in profound sleep, and the asthmatic state lasted for a shorter period. On the 21st he lay almost constantly quiet; and on the 22d, I found him with the rattle that usually precedes death. On the morning of the 23d he expired.*

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* Description des Maladies de la Peau. Paris, in folio, 1806.

In the last place, I shall embrace the present opportunity to mention a case, which, though differing in character from the preceding observations, may be properly enough introduced under the title of this article; and it is calculated to give rise to various interesting considerations, which, however, I have not at present convenience to pursue in the manner they deserve.

P. D., between 70 and 80 years of age, fell on the left hip on the foot pavement, though by no means with great violence, in June 1831; and thereby sustained such an injury of the left inferior extremity, that he was never afterwards able to leave his bed. When first seen by me, about a month after the accident, the limb was somewhat shortened, and the foot, when examined at different times, both in bed and out of it, appeared sometimes to have a tendency inwards, and at other times outwards. The hip was swelled and altered in shape; in particular, there was a marked bulging below the *trochanter major*, and this process was much nearer the crest of the *ilium* than on the opposite side. Upon motion, an unusual sound was produced; but I could never perceive the distinct *crepitus* indicating the grating of fractured bones. The patient would permit no treatment, and he died three months after the injury. His symptoms before death I cannot detail.

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* When this case occurred, it was quite new to me, and I have never since met with an account of any similar instance, except in a number of the Lancet, published about three years ago.

At the time I first saw this case, I had an opportunity of showing the limb to Mr Mitchell, surgeon, Kemnay; and it was afterwards examined by several medical gentlemen of this city. Different individuals suggested different modes of explaining the condition of the parts; viz. dislocation, dislocation and fracture, fracture immediately below the *trochanters*, and fracture of the neck; and though I was at one time led to be of a different opinion, my own first impression, as well as my last, was in favour of the last-named state of matters.

I could not bring myself to believe it possible for the *trochanter major* to advance so far above its usual situation, while this process remained connected with the *acetabulum;* and it therefore appeared necessary to suppose the *trochanter* detached from the socket either by means of a dislocation, or in consequence of a fracture of the neck of the *femur;* an opinion, however, which was shown not to be quite correct, by the unusual appearances displayed on inspection after death. The degree of violence, and the patient's age, made dislocation far less probable than fracture. But, indeed, were a case to happen wherein symptoms and circumstances in general, pointed in an exactly equal degree to dislocation and to fracture of the thigh-bone, the chances would be very much in favour of the latter, inasmuch as it is greatly more common than dislocation. The direction of the foot was by no means decidedly characteristic of fracture; but I think there is reason for believing the tendency of the foot in such cases to be influenced by various circumstances, and therefore not to be uniformly the same. I was called at one time to a boy in whom both thigh-bones were fractured; and on my first visit he lay on his back with each foot pointing towards the other.

All the circumstances, nevertheless, in the case above detailed were not fully accounted for by supposing fracture of the neck; nor was I able in any way to explain the whole of them to my entire satisfaction. Fracture of the neck of the *femur* is indeed usually indicated with sufficient precision. It was long overlooked, and is even yet considered difficult to detect; but having had an opportunity of managing not a very few cases of this description, I venture to say, that this fracture may for the most part be discovered by moderate sagacity and attention. That it has taken place, is almost quite certain when the limb is shortened, and the toes turned outwards, and when, at the same time, there is no decided *crepitus;* but, even keeping out of view these considerations, I would say, that when there is no good reason to suspect fracture of the shaft, or dislocation of the *femur*, (both of which occurrences are usually marked by decisive symptoms,) and when, also, there exists a material defect in the movements of the thigh, not to be accounted for by any injury of the soft parts, it may be laid down as a general rule, that the neck of the *femur* is fractured. In the case above detailed, the following were the appearances upon inspection after death.

The muscles adjacent to the *trochanter major* appeared to be infiltrated with dark blood, and a small quantity of a liquid ran out, which appeared to be blood. Upon reaching the upper part of the bone it was found that the finger could be insinuated among the *cancelli*, fairly into the shaft. The femur was found to be fractured across, close to the *trochanters*, and from this transverse fracture, there extended an oblique one, passing for several inches down the bone, thus detaching from the shaft a longitudinal piece, whose upper part was the *trochanter major*. No progress whatsoever towards reparation had been made in any of the fractured portions. Upon removing the ball from the *acetabulum*, it was found that the round ligament continued attached to the *acetabulum*, but was deficient at its other extremity, there being a roundish depressed mark in the ball where the ligament is usually connected.

I know not whether such a reparation of the round ligament has been often observed. This is the second instance in which, without any dislocation, I have found it detached at one of its extremities.

It is well known that occasionally the most careful examination fails to discover a morbid condition adequate to account for death; while, on the other hand, extensive disease is sometimes found in organs where it had never been suspected during life. I was assured that the old man who was the subject of the preceding case had scarcely ever had a complaint in his whole life; and he died probably from the mere effect of violence, yet was he a mass of disease. The head was not opened. The heart was small, and partly degenerated into a fat-like matter, and the aortic valves were calcareous. In the chest there was a considerable quantity of water. The left lung was of a diminutive size, and a remarkably soft structure. The liver was contracted and softened. The gall-bladder was filled with *calculi*, most of which were of loose consistence, and speedily crumbled down; but one, still in my possession, of an oblong form, and more than half the size of an ordinary thumb, continues firm and entire. The left kidney was nearly absorbed, its place being occupied by a bladder filled with a watery fluid.

Aberdeen, 2d December 1832.

ART. III.—*On* Atrophia a Ventriculo *(Mal d'Estomac,) or Dirt-Eating.* BY DAVID MASON, Esq. M. R. C. S. L.

THE name dirt-eating is a common but inappropriate appellation, in as much as the habit is rather a consequence than a cause of the disease, the desire for that unnatural material being obviously excited by a previous disordered condition of the stomach.

Mal d'estomac of the French is rather more applicable, and conveys a more correct notion of the seat and proximate cause of the disorder, than the erroneous and vulgar term dirt-eating. *Mal d'estomac*, however, is a name too general, and is referable to so many different derangements of the same organ, that it annuls all claim to precision. *Atrophia a ventriculo*, which I have chosen, perhaps expresses the origin and nature of the disease a little more correctly than the before-mentioned terms. Although this disease is properly classed under the genus Atrophy, it is not strictly referable to any of the species noticed by Sauvages or Cullen.

From the accounts of various travellers, it appears that the practice of eating peculiar earths is not uncommon among the native inhabitants in many tropical countries. In Java, we are informed, that a species of reddish clay, impregnated with iron, is baked into thin cakes, and toasted, and in that state eaten by pregnant women. It is also said, that the vanity of females prompts them to use these earthen cakes, for the purpose of impairing the appetite, and producing a thin and meagre figure, which is reckoned a fashionable form among the Javanese. We can scarcely suppose, however, that a personal exterior so formed would be of long duration. The progressive emaciation, pallid features, and debility, the natural result of such a practice, must ultimately prove disgusting to the most whimsical taste. But the habit, when once acquired, is not easily overcome, and thus youthful vanity, in this, as in many other instances, lays the foundation of future disease and misery.

M. Humboldt, and other travellers, describe the practice of eating earths as frequent among the various native tribes in the tropical regions of South America. This celebrated scientific traveller, in his account of the habits of the Ottomaques, on the river Orinocco, makes particular mention of their eating a peculiar kind of clay, during the periodical inundations of the river, by which they are prevented from catching their usual supply of fish ; and he speculates a little upon its probable constitutional uses, among that disgusting tribe who devour it in such large quantities. M. Humboldt questions whether or not portions of it may be assimilated by the digestive organs, and fitted for absorption and the nourishment of the body. The Ottomaques themselves consider it nourishing, as it satisfies the appetite for food; nor are they unhealthy, it is said, although during the season of scarcity consuming such extravagant quantities of this singular aliment. Humboldt, however, notwithstanding all the facts he could gather on the spot, considered the following questions undecided. Can earth really be a nutritive substance? can it assimilate itself to the substance of our frame? or is it only a load on the stomach merely keeping it distended, and thereby alleviating hunger? The only circumstance that appears to give any probability to the affirmative of the first question, arises from the Ottomaques preserving their health, during a time when they are so slenderly supplied with any other nourishment. This season, however, does not continue long; and although during that time their health may have partially suffered, the subsequent abundance of nutritious food, which the cessation of the rains, and consequent subsiding of the river, enables them to procure, would speedily counteract the effects which a temporary famine had produced, and which may have escaped hasty and transitory observation.—This conjecture is supported by a fact also related by Humboldt, that other tribes in South America never fail to become diseased by the practice of eating earth; and its injurious effects among the negroes in the West Indies are well known. If, then, it is admitted that this unnatural aliment can in no case afford nourishment, the most probable conclusion is, that all such earths, being only used by those people who are insufficiently supplied with nourishing food, serve to allay the sensation of hunger, as well as to correct the products of bad food and digestion, and the unhealthy secretions which arise from a disordered state of the organs, sometimes the result of other causes.

Among the negroes in Jamaica, the disease and the habit of dirt-eating is most commonly brought on by long abstinence, bad food, and an irregular and inadequate supply. The persons most frequently exposed to these privations are fugitive negroes, who have absconded from their homes, and taken refuge in the woods, or lead a wandering and necessarily watchful life, in the vicinity of the villages, without any certain or constant means of subsistence. The continued exposure to cold and rain, and the inclemencies of the weather, which are inevitably encountered by such vagrants, combine with hunger to effect the same constitutional injury. The stomach along with the system gradually suffers from these hardships and privations. A tormenting gnawing pain in this organ is always the first and most constant symptom.

and it is to relieve this uneasy sensation that the sufferer betakes to eating some absorbent earth which affords temporary relief.

Another class of negroes, among whom the disease occasionally prevails, is the indolent, who, from mere natural laziness, neglect the cultivation of their provision grounds, and thereby become exposed to similar wants. It has been well ascertained, that negroes of this description, from constitutional apathy and sluggishness, caused sometimes by parental neglect in child-hood, have resorted to the practice of eating dirt, as well as some other materials, designedly to produce ill health, as the means of evading work, and becoming hospital patients, or idle invalids in the negroe-houses. It will scarcely be credited that some individuals of this class have been detected eating quantities of cloth, both linen and woollen,—an instance of which it may be useful to mention.

A negro boy, who was not known to be in want of any thing, either in the way of food or other ordinary comforts, was accidentally found on the road at some distance from his home, in a state of insensibility. He was conveyed to the property to which he belonged, and on examination by the medical attendant, something was observed projecting from his mouth, which was found to be the end of a rag of blue baize, part of which had descended into the œsophagus, and which, in fact, the boy had been in the act of swallowing. I am not prepared to determine what peculiar effect such a curious viand would have on the animal economy; but its removal in the present instance, and the administration of some evacuating medicines, soon restored the patient to health. I could enumerate some other cases of cloth-eating without being able to account for so extraordinary a propensity in any other way than a moral depravity, creating a desire to become sick for the purposes I have already mentioned. I have not had an opportunity, however, of attentively observing either the early or later history of these cases. It has been supposed, and I believe with some reason, that example has sometimes contributed to produce the habit of dirt-eating. The practice is well known to be frequent on some properties, while on others it is quite unknown. Dirt-eaters, also, have been overheard urging their companions to partake of their favourite material; and if we can safely draw conclusions from analogy, it would not be difficult to prove the influence of advice and example in the acquisition of habits no less destructive and disgusting at first than dirt-eating. I may notice dram-drinking and chewing tobacco.

The kind of earth which the negroes afflicted with this distemper usually prefer, is a compound of clay and carbonate of lime, tinged of a red colour, by a small proportion of oxide or carbonate of iron; but when this earth cannot be obtained readily, marl, or wood ashes, composed chiefly of fixed alkali and charcoal, are substituted. The strong propensity which pregnant females have to take alkaline earths is generally known. These substances seem to neutralise an excess of acid in the stomach, or to correct some morbid formation in the gastric fluid. In the same way, it is not uncommon for pregnant female negroes, who suffer from a similar disorder of the stomach, to bake, like the Javanese, the above-mentioned red earth into cakes, and in that state occasionally use it for temporary relief.

These facts may serve to explain the peculiar morbid state of the stomach in dirt-eaters; and account in many cases for that irresistible craving for absorbent earths, as the means of palliating the incessant pain of which they invariably complain. If these substances merely served to allay the sensation of hunger, that effect would be more effectually accomplished by appropriate food; but they appear to do more, or to act in a different way, for we find, when the practice has been confirmed, the desire is not speedily removed by a regular and abundant supply of food. From this circumstance, we are inclined to conclude, that dirt-eating, instead of being a disease, or the cause of disease, is actually a remedy; and probably the various earths, marl, and ashes made use of, really contain some useful ingredients mixed up with much hurtful matter. This conjecture receives some support from practical experience, by which we are taught, that iron and alkalis are of great efficacy in this disease, when aided by good nourishment, and some other salutary means. The earths then made use of by dirt-eating negroes are perhaps only injurious from their impurities, and of course their effects may be expected to vary according to the quality of the earth that is consumed; but all of them, by long continuance and frequent repetition, will necessarily augment the primary disorder.

The train of symptoms that progressively arise from atrophy of the stomach and dirt-eating are indigestion and emaciation; a bloated countenance; a dirty-yellow tinge in the cellular tissue of the eyelids; paleness of the lips and ends of the fingers; whiteness of the tongue; great indolence, with an utter aversion to the most ordinary exertion; palpitation of the heart; difficult, or rather frequent and oppressed, respiration, even during moderate exercise, which never fails to induce a rapid pulse; habitual coldness of the skin; and occasional giddiness of the head, attended with a disposition to faint, sometimes causing a state of stupor. As the disease continues and advances, dropsical effusion takes place in the thorax or abdomen, or both. The texture of the blood and other fluids become changed; the venous blood appears pale and watery, and its composition and consistence are so much altered, that it deposits in the cavities of the heart a kind of fibrino-albuminous or gelatinous polypus, which adheres to the *columnæ carneæ.* These polypi are found both in the auricular and ventricular cavities, and have long attached appendices floating loosely in the cavities, and the extremities of which are carried by the current of blood into the orifices of the great arteries. Of these polypi, which are compact, colourless, and insoluble in water or alcohol, I have seen many instances on dissection; and in all cases of this disease, where the palpitation of the heart is remarkably conspicuous, one or more of them may be supposed to exist.

Dr Baillie, in his observations on polypus of the heart, in his excellent work on morbid anatomy, seems to consider it altogether a deposition of coagulable lymph after death, and he speaks of the polypus as filling up the cavity of the heart in which it is formed, so entirely as to prevent circulation. That polypus may be so formed about or after the period of death, I do not deny. Indeed, if such depositions occur at all in that way, we should expect them to be very common.

The polypi, however, which I have just described are evidently of prior origin. They do not fill the cavities; but closely embrace the *columnæ*, to which they are slightly attached; and the appendices are long, loose, fibrous-looking processes, which, although projecting into the pulmonary arteries, as well as aorta, by no means fill the orifices, nor are they found in the *vena cava*, or pulmonary veins. I must acknowledge, nevertheless, that I have discovered similar concretions in the heart, on dissecting the bodies of negroes cut off by disease, but who had not, previous to death, been suspected of dirt-eating. As the general symptoms, however, were much alike, more extensive observation has induced me to conclude, that the primary cause was probably the same, and the habit of dirt-eating common in all, although carefully concealed by some more artful patients. Young females, in particular, have been often detected in this practice, after exhibiting a train of unaccountable symptoms, commonly attributed to the absence of the catamenia. This state of the uterine function, I believe, is generally manifested among female dirt-eaters, and may be considered an effect of the disease.

It might be expected that the stomach, being the primary seat of this disease, would show peculiar morbid changes on dissection; but in those cases which I have examined after death, these appearances were not very remarkable. The internal surface was usually covered with a whitish viscid matter, probably thickened mucus; the liver was generally found hard and condensed; and the gall-bladder filled with dark-coloured bile, nearly resembling tar in consistence and appearance.

The cure of this malady should be conducted on general principles; and, in the earlier stages, by strict and steady attention, success may be often expected. But when the disease has been long protracted, and produced that deteriorated state of the blood and other fluids to which I have attributed polypous concretions in the heart, it probably admits of no cure. Temporary relief is all that can be attained in such desperate circumstances.

It has been already observed, that the negroes most commonly affected with this disease are fugitives and other ill-disposed and indolent persons, who neglect their provision-grounds and misuse the time allotted for such cultivation, in stealing from others, or in abandoned indolence. In a country of great fertility, a few hours' labour in the week, industriously bestowed on a small piece of land, particularly new land, which requires no manure, will produce an abundant crop of provisions, amply sufficient for a whole family. Diligent negroes, therefore, in ordinary seasons, so far from being in want, are generally able to carry a considerable superfluity to market. Among such industrious persons, dirt-eating is unknown. It may also be remarked, that, where order and industry prevail, they are always accompanied by cleanliness and other salutary habits.

In a curative view, therefore, the first step obviously is, to reclaim, if possible, delinquent negroes from their slothful habits, and to provide them with the necessary quantity of food. Regulated moderate labour is also to be enjoined, not only as a salutary exercise, but to check indolent propensities, and gradually to restore a disposition to industry. Such, however, is the indolence concomitant on the disease, or inherent in the very nature of the individuals, that it requires no small degree of patience and firmness to enforce this necessary exercise. In addition to the above regulations, respecting food and exercise, both moral and physical, cleanliness and proper clothing are no less demanded. The last is easily supplied; but the first is often counteracted by the same invincible sloth so often noticed, by which the simple exertion required for personal cleanliness becomes an intolerable burden. These prophylactic means are so beneficial, and are now so much objects of attention, that dirt-eating is become much more rare than it was some years ago.

The strictly medical treatment consists, *first*, in the administration of emetics and purgatives, and afterwards a continued course of such tonic medicines as act more directly on the digestive organs.

Young children who have been neglected by careless parents, and ill fed during infancy, become tabid both from dirt-eating and the formation and accumulation of worms. Moderate doses of calomel, repeated two or three times, and the action of the bowels afterwards stimulated by a few doses of castor oil and turpentine at short intervals, seldom fail to destroy and expel these parasitic animals, together with much morbid mucus in which they seem to be engendered and nourished.

The best tonic medicines which I have used are a bitter laxative infusion of *lignum quassiæ*, rhubarb and ginger, in a pint of which eight or ten grains of sulphate of iron is dissolved. I have generally found the use of soda or potassa beneficial, and have combined either of them with these medicines by dissolving one or two drachms in the above infusion,—of course the sulphate of iron by such combination will be decomposed. By a little agitation, however, the iron will be taken into the stomach in the state of oxyde,—a form into which it is perhaps finally reduced in the system. Nevertheless, if this prescription should be considered objectionable, because unchemical, the iron may be given separately, either in the form of muriated tincture, or a simple solution of the sulphate in water. It is too essential a part of the remedy to be altogether omitted.

When the disease is in a more advanced stage, and symptoms of dropsical effusion and hepatic disease have made their appearance, an alterative course of calomel and opium becomes necessary. In cases merely anasarcous, unaccompanied by any marked hepatic affection, the tonic laxative medicines above recommended, with the application of blisters to the lower extremities will often prove effectual, always keeping in remembrance, that medicine will be of little avail unaided by the important auxiliaries of food, clothing, cleanliness, and proper exercise.

It was formerly the practice to keep dirt-eating negroes in close confinement, and to use many other harsh and foolish means to prevent, in every possible way, the craving patient from obtaining the hurtful material, which was erroneously conceived to be the primary, and in fact only, cause of his disease. This method has been found inefficient, and is now in a great measure abandoned, although the opinion on which it is founded has still numerous advocates.

Close confinement, I believe, in such cases, to be most pernicious. Free air and exercise are necessary to health in all circumstances and probably are more really useful than total abstinence from dirt-eating. However desirable it may be to restrain the practice by every safe and practicable means, it should always be held in view, that the means will be unsuitable if inconsistent with general health.

I omitted to mention the occasional use of opium as a part of the medical treatment. I believe this medicine is seldom given in cases of dirt-eating; and from my own experience, I am unable to say much on its efficacy. In a few cases, however, I have found a moderate dose of opium exert its usual influence in relieving the incessant pain in the stomach of which all dirt-eaters complain. Perhaps opium combined with ammonia judiciously administered, with the before-mentioned remedies, by relieving the pain, may contribute to remove the desire for the destructive practice of eating earth.

ART. IV.—*On the Varieties, Symptoms, and Treatment of Epidemic Cholera, as it appeared in Cupar Fife.* In a Letter from Dr SCOTT to Dr CLARK of Perth.

MY DEAR SIR, *Cupar Fife, 1st December* 1832.

I WAS favoured with your communication of yesterday, and shall have much pleasure in supplying you, as far as I can, with the information you require on the subjects mentioned in your letter; and state briefly what I consider the most successful practice in cholera, as derived from my own experience of the epidemic since it appeared in this place.

It is now somewhat more than three months since it broke out here. Its mode of introduction is doubtful. The first case that attracted particular notice,—for bowel complaints had been prevalent for some time before,—was that of a woman of intemperate habits, the mistress of a small lodging-house, whose lodgers, a man and his wife, a fortnight before, had come from the neighbourhood of Dundee, and are said to have had communication with the disease, that is to say, had lodged in a house where a fatal case occurred. The next case was that of the female lodger herself; and afterwards it spread to the neighbouring houses, and was for a month confined to that part,—a small suburb of the town. It then appeared in several places, almost simultaneously, in the centre of the town; and soon afterwards spread in various directions. All the first cases, without exception, were fatal.

The opinion, therefore, generally entertained here of the cause of this malady is, that it partakes of the nature of an infectious epidemic, that is to say, it propagates itself after the manner of measles, scarlet fever, hooping-cough, and other epidemics; although its infectious power is evidently not so great as any of those mentioned;—and, besides, that it requires on the part of the individual a predisposition to take on the complaint, which predisposition I consider to consist in a debility, or a habitual irritability, of the abdominal viscera,—chiefly of the stomach and intestines.*

Now, before speaking of the practice I have found most successful in cholera, I will say a few words about the mode in which it makes its attacks here. From frequent observation, confirmed now by no inconsiderable experience, I can say that it invades in three several ways. The most common is, as has been frequently observed before, 1*st*, a diarrhœa, or looseness of the bowels, of from one to three days standing or more, gradually becoming more frequent, thinner, and paler, till at last serous evacuations, and generally suddenly, occur in large quantities, upwards and downwards, accompanied by great depression of strength, failure of pulse, collapse of features, a shrinking of the whole body, coldness, cramps, &c. All this of course you knew before. But what I want to point out particularly is this, that, so long as the evacuations indicate the presence of bile, the temperature of the body is rather exalted, and the pulse quick and pretty firm,—so that it may be regarded as common diarrhœa; and, indeed, in the outset it is almost impossible to draw the distinction. Yet I look upon all these complaints with suspicion during the prevalence of the epidemic. But so soon as the secretion of bile has ceased, and the serous evacuations are established, the strength of the individual fails; the temperature sinks, the pulse ceases to be felt, the features collapse, the voice is reduced to a whisper, and, in fact, if no reaction take place, by the aid of art or nature, he dies in the course of twelve or twenty-four hours.

The second mode of invasion is characterized by the individual being seized with a sudden and overpowering sickness, prostration of strength, trembling, retching, giddiness, fearfulness,—a conviction, in short, on the mind of the patient that he has fallen into the hands of some terrible disease; and these symptoms, if not arrested, are soon succeeded by vomiting and purging of the usual cholera fluids, cramps, coldness, &c. and, generally speaking, very sudden death.

In the third mode of attack the individual is admonished of its approach by cramps affecting the muscles of the legs and thighs, or the arm and fore-arm. There are also present severe pains of the stomach or bowels, as if the muscular coat of these organs were affected with cramp or spasm. Sometimes, however, a mere sense of uneasiness or anxiety in the precordial region is felt, and these premonitory symptoms, in no long time, terminate in a severe attack of true cholera, so that, in this variety also, the individual, in a wonderfully short space of time, becomes powerless, pulseless, voiceless, and cadaverous.

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* The brevity necessary to be observed in a letter, precludes me from illustrating this opinion by a reference to facts.

From these circumstances I conclude, that the poison or force of the disease in the first instance, in most cases, is expended on the mucous membrane of the bowels,—hence the premonitory diarrhœa; in some cases on the nervous system,—hence the sudden and oppressive sickness, prostration of strength, &c.; and in others on the muscular system,—hence the cramps. No doubt, occasionally, from the suddenness of the invasion, and the rapidity of the progress of the malady, the varieties mentioned above may be so combined, that it is difficult to distinguish them, but in general, I have been able, especially in the outset, to note them.

With regard to the mode of treatment employed; since the disease presents three distinct stages, viz. the incipient, the cold and hot, or, what they are now more commonly styled, the premonitory symptoms, and the stages of collapse and reaction, so I will speak of the treatment as applicable to each of these stages.

In the first stage of the first variety, I think a dose of calomel, opium, and ipecacuan,—five grains of the former to one of each of the latter,—at bed-time, followed in the morning, if necessary, by an ounce of castor-oil, or a Seidlitz powder, in general, is sufficient to arrest the premonitory diarrhœa. If not, these medicines may be repeated on the following night and morning.

In the first stage of the other two varieties I always begin by blood-letting, as I consider that the symptoms prognosticate a very formidable attack, and require to be immediately put down. By so doing, I have never failed in moderating, and, in most cases, arresting the attack.

In the second stage of all the three varieties,—if the pulse will at all admit of it, and the constitution be somewhat strong, I have immediate recourse to blood-letting. This is followed by an ipecacuan emetic, whether vomiting be present or not,—a mustard poultice to the stomach and belly,—and afterwards small doses of calomel, opium, and ipecacuan, in the proportions formerly mentioned, every one, two, or four hours, according to the violence of the symptoms, but especially of the purging and cramps, there being no safety to the patient so long as these latter continue. In addition to these means, bottles of hot water, hot bricks, or bags containing heated salt, are also had recourse to. If the cramps be very violent, forcible friction with an opiated liniment is also employed. Equal parts of the compound tincture of soap and tincture of cantharides answer this purpose very well. As the thirst during this stage is excessive, and the demand for cold fluids very great, I allow them to drink as much as they please of pure cold water. Sometimes a little of the carbonate of soda is added to it; sometimes brisk small beer is preferred; at other times ginger-beer. Of all these they have their option. In the extremes of life, that is to say, in the very old and very young,—in the debilitated and broken-down,—and in those already pulseless and cold, I omit the bleeding, but never fail to administer the emetic and the other medicines in proportioned doses.

After the mustard poultice has lain on for an hour, or as long as the patient can bear it, I generally apply to the same place a common blister. This keeps up the stimulus which the poultice has commenced. Opiated enemata, especially when the purging is violent, are also frequently had recourse to.

In the third or febrile stage, a great deal, of course, must be left to the judgment and discretion of the practitioner, as the patient may be then said to labour under symptoms very similar to those of typhus, I generally continue, but in less quantity, and at longer intervals, the combination of calomel, opium, and ipecacuan,—say a dose at bed-time, and perhaps another, if the bowels be inclined to looseness, during the night, occasionally followed in the morning by an ounce of castor oil, or a Seidlitz powder, and permitting the patient all the while to drink plentifully of cold water, soda water, or common brisk small beer. If the head becomes affected with congestion or inflammation, which not unfrequently happens, I apply leeches to the forehead, and afterwards a blister to the back of the head and neck. I have found these also the best applications when congestions or inflammations occur in the cavities of the chest or belly. If the gums become tender, or slight ptyalism be induced by the calomel and opium, I consider it a very favourable event, as the recovery of the patient is almost the certain consequence.

If the attack be severe, the convalescence is always slow, and sometimes relapses, even fatal ones, from slight indiscretions, have taken place. The vital powers seem to recover themselves very slowly from so severe a shock; and several weeks elapse before the individual can be said to be fairly himself again. I have observed, however, that since cold fluids have been allowed freely during the whole course of the disease, the febrile stage has been much less in severity, and shorter in duration. You know that during the cold or collapsed stage several functions, important to life, are suspended. I have noticed with some attention the order of their restoration. The first restored is the biliary secretion, as indicated by the presence of bile in the feces; in a day or two, or more, the urinary; next the cutaneous, then the salivary, and, lastly, the gastric, at which time the tongue becomes clean, and the appetite pretty good. The patient may then be said to have in a great measure recovered his health. But, for a considerable time afterwards, there is a feeling of weakness, uneasiness, and frequently a tendency to cramp in the muscles of the extremities.

I have also frequently had occasion to notice, during the prevalence of this epidemic, that, if it were necessary in any other disease to perform the operation of blood-letting, the blood invariably presented an uncommonly dark appearance,—a proof to me, if any were wanting, whatever be the remote cause of this pestilence, that, after its introduction into any town or place, every individual within its range, sooner or later, becomes impressed with its influence. Hence many complained of weariness and pains of their limbs, of indigestion, and of a sense of indisposition and feebleness, to which they were unaccustomed, but which it was difficult to define.

From the above, you will perceive that the chief means on which I depend for the cure of cholera consist, if the circumstances of the case will at all admit of it, of, 1*st*, blood-letting; 2*d*, an ipecacuan emetic, whether vomiting be present or not; 3*d*, a combination of calomel, opium, and ipecacuan in small, but repeated doses; 4*th*, the restoration of the temperature of the body by the application of external heat, mustard poultices, blisters, &c.; 5*th*, forcible frictions, if cramps be present, by means of opiated liniments; 6*th*, opiated enemata when the purging continues violent; and 7*th*, cold diluents during the whole course of the disease.

Ardent spirits, unless in confirmed drunkards, have been very sparingly employed, because I observed that, although they seemed to contribute to bring about the stage of reaction, yet the most of the persons so treated were seized with congestion or inflammation of the head, of which they afterwards died.

As I have found these means as successful as in all likelihood is to be expected from any human or remedial agency in so formidable a malady, I have not searched for strange remedies, nor perplexed my practice with a multitude of things. The numerous nostrums that from time to time have been extolled by ignorant or designing men, I have found not only useless, but dangerous, inasmuch as they cause a serious loss of time, and lead the credulous astray, from having recourse to the only means that are likely to be of any benefit to them.

With respect to the proportion of deaths to the recoveries, we have had, up to this date, 130 cases and 65 deaths,—that is, exactly a half have died,—no great success certainly. But in explanation, I must observe that, in the *first* place, no cases were for a long time reported to the board, but such as were considered very severe, or already in the collapsed stage; and in the *second* place, that a prejudice, especially among the lower classes, for some time existed against medicines and medical men, so that many chose rather to die than submit to treatment. And as all the non-reported cases recovered, they are not included in the above list.

The main points of the practice, as detailed above, at least latterly, have been, with unimportant deviations, followed by all the practitioners here.

As to the remuneration for attendance about which you are desirous to be informed, the plan at first proposed by the medical gentlemen, and finally adopted by the board, is to allow one guinea for each case in town, and two guineas in the country. This is neither very adequate nor possibly very fair. But, taking the short cases with the long, and considering that they were chiefly paupers, or nearly so, that were attacked, it is reckoned a tolerable allowance; besides, it simplifies the matter, and saves a good deal of trouble and difficulty in rendering and examining specific accounts. I must observe, however, that, although the board granted a sum equivalent to a guinea the case, yet in the distribution of this amongst the medical men, this rule was in some measure departed from. For example, although I had by far the greater number of cases, and some had comparatively few, yet it was considered that they were entitled to be compensated for loss of time in attending upon the board,—for advising and superintending many things connected with medical police.

I have now answered your queries to the best of my ability. If I have omitted any thing on which you would wish to be informed, I will be glad to supply it at another opportunity. Meantime, I beg to congratulate you on your own excellent success in this terrible disease, and have the pleasure to be at all times, my dear Sir, your humble servant,

DAVID SCOTT.

ART. V.—*Anatomical Observations on the alleged existence of a Ganglion Oticum in Man and Quadrupeds.* By FREDERICK SCHLEMM, Professor of Anatomy in the University of Berlin, &c.

IN an essay published at Heidelberg in 1828, entitled *Ueber den Ohrknoten*, Dr Frederick Arnold, prosector in the university of Heidelberg, has given an account of a newly discovered ganglion connected with the third branch of the fifth pair of nerves. This ganglion, which he discovered whilst investigating the anatomy of the cephalic portion of the great sympathetic, is described as lying on the inner side of the third branch of the fifth pair immediately below the *foramen ovale* of the sphenoid bone, and, from its supposed intimate connection with the organ of hearing, has been named by him *Ganglion oticum s. auriculare.* The first part of the essay contains a minute description of the *Ganglion oticum* as it exists in man and several mammiferous animals; the second is devoted to a physiological inquiry into the purposes which it is intended to serve in the animal economy, and its relation to the other nervous ganglions of the head.

Although the great patience and dexterity with which Dr Arnold has manifestly pursued his researches might perhaps be deemed a sufficient pledge of the accuracy of their results, yet it seems to me, that on a subject relating like the present to such an important organ as the ear, anatomists should not rest satisfied with the evidence of a single inquirer. The alleged discovery of Dr Arnold seems in an especial manner to demand further investigation, as it is calculated to raise distrust in the authority of the most diligent and successful inquirers into this branch of anatomy, such as the first Meckel, Palletta, Bock, C. Bell, &c.; and in this there would indeed be no injustice if these anatomists had really passed over unobserved such a distinct and striking object as the ganglion described by Dr Arnold.

Such considerations as these, and also a complaint expressed by Dr Arnold of a want of due attention on the part of anatomists to his discovery, have led me to investigate the subject with all possible care, and I shall now make a brief statement of the result of my inquiries.

A.—In Man.

On a careful examination which I repeated on six subjects of different age and sex, I found nothing on the inner side of the third branch of the *Nervus trigeminus,* except a reddish and vascular cellular membrane; on removing which, the origin of the *Nervus pterygoideus internus* from the smaller portion of the *Nervus trigeminus,* that which passes behind the *Ganglion Gasseri,* was brought into view. The internal pterygoid nerve gives off, near its origin, a branch which runs outwards, and a little backwards on the fore-part of the Eustachian tube, and enters the *Musculus tensor tympani,* in which it is distributed. This is the *Nervus ad tensorem tympani.* Neither of the above-mentioned nerves arises from a ganglion, and the *Nervus pterygoideus,* of which the *Nervus ad tensorem tym-*

pani is a branch, appears to constitute before coming off a peculiar *fasciculus* of the third division' of the *trigeminus.*

In other instances, the *Nervus pterygoideus internus* arises by two roots, a superior and inferior, of which the former gives off the *Nervus ad tensorem tympani*, and a nervous twig to the *Musculus circumflexus palati.*

B.—Mammalia.

(*a.*) *Ruminating Animals.*—In the calf there is a reddish-gray body, resembling a lymphatic gland, situate on the inner side of the third branch of the fifth pair, close under the *foramen ovale*, the figure of which Dr Arnold has minutely described at page 29 of the before-mentioned work. From this substance (which is the *Ganglion oticum* of Dr Arnold,) numerous light red filamentous cords go off in different directions. One bundle, in particular, runs forwards and adheres to the *Nervus buccinatorius*, without, however, forming a more intimate junction with it, of which it is easy to satisfy one's self by pulling the parts asunder, and especially if this is done under water. Another cord goes from this body towards the *Circumflexus palati*, and a *fasciculus* of thread-like cords runs over the Eustachian tube towards the *tympanum* and *Nervus crotaphiticus.* Covered at its origin by this reddish-gray body, the *Nervus pterygoideus internus* arises from the third branch of the *trigeminus*, passes under the said body, but remains unconnected with it, except by cellular membrane, and goes to the internal pterygoid muscle. It gives off near its origin the *Nervus ad tensorem tympani*, which passes through the posterior part of the gray substance, or so-named *Ganglion oticum*, without undergoing any change in appearance, and without giving or receiving any filaments, and runs towards the *tympanum* in a groove before or above the Eustachian tube, where it terminates in the *Musculus tensor tympani.*

In ruminating animals, and particularly in the calf and stag, the *Nervus ad tensorem tympani* is accompanied by a whitish filament, very much resembling a nerve in colour, which really arises from the so-named *Ganglion oticum*, and runs over the *Musculus tensor tympani* towards the back part of the *tympanum*, where it loses itself in the membranous lining of that cavity. Dr A. has named this filament *Nervus petrosus superficialis minor*, and has described a connection between it and the *Nervus glosso-pharyngeus.* What this filament may be, whether a tendinous cord or otherwise, I do not presume to determine, but it is assuredly not a nerve.

(*b.*) In the sheep the reddish-gray mass, or *Ganglion oticum*, except some slight alteration in shape, presents no remarkable difference. The *Nervus pterygoideus internus* does not take its rise from it, but from the third branch of the *trigeminus*, and gives off in a very distinct manner the *Nervus ad tensorem tympani*, and the *Nervus ad circumflexum palati*.

(*c*.) In the stag and roe-deer the mode of origin of the *Nervus pterygoideus internus* and of its branches, viz. the *Nervus ad tensorem tympani* and *Nervus ad circumflexum palati*, is the same as in the sheep.

Solidungula.

In the horse, the third branch of the fifth pair, soon after it has passed through the *foramen ovale*, and while it lies close to the Eustachian tube, is covered by a firm reddish substance, from which white fibrous cords come off, having, on a superficial inspection, the appearance of nerves, but which, on being macerated in water, and then immersed in spirits, may be readily distinguished from them by difference of colour and absence of the zig-zag appearance which belongs to nerves. The *Nervus pterygoideus internus* arises from the smaller portion of the *trigeminus*, and runs inwards and forwards, the internal maxillary artery crossing it on the inside, as that vessel proceeds towards the spheno-maxillary fissure. The *Nervus ad tensorem tympani* arises from the *Nervus pterygoideus internus* at the point where the latter is crossed by the artery, and consequently more than an inch distant from the *foramen ovale*. The *Nervus ad tensorem tympani*, turning round the internal maxillary artery, runs outwards and backwards through the ligamentous mass of the Eustachian tube to the *tympanum*, and terminates in the *Musculus tensor tympani*. After giving off this nerve, the internal pterygoid nerve sends a filament to the common origin of the *circumflexus* and *Levator palati* muscles.

Dr Arnold describes the *Nervus ad tensorem tympani* as arising from the reddish-gray body, or *Ganglion oticum*, which lies on the third branch of the fifth pair, immediately below the *foramen ovale;* from which description I am disposed to think that he has not discovered the true *Nervus ad tensorem tympani* in the horse, since this nerve arises at a considerably greater distance from the *foramen ovale* than the filament which he has taken for it.

3. *Multungula.*

In the pig the *Nervus ad tensorem tympani* is a thin filament, of a light-reddish colour, and arises evidently not from a ganglion, but from the *Nervus pterygoideus internus*.

4. *Feræ.*

(*a*.) In the dog the origin of the *Nervus pterygoideus inter-*

nus lies much less concealed. This nerve gives off the *Nervus ad tensorem tympani*, and a small twig to the *Circumflexus palati.*

(*b.*) In the cat, the nerves in question arise in the same way as in the dog. The *Nervus ad tensorem tympani* is in this animal remarkably large in proportion to the *Nervus pterygoideus* from which it arises.

The following are therefore the general results of my observations, viz.

1. In man, the so-named *Ganglion oticum* does not exist.
2. That body is present in ruminants and some other animals, but it is not united to the third branch of the fifth pair by nervous matter, being connected with it merely by cellular substance; and in my opinion, the body in question is not a nervous ganglion, but a lymphatic gland.
3. Except the filament termed by Dr Arnold *Nervus petrosus superficialis minor*, already alluded to by me, in the calf, which Dr A. describes as arising from the *Ganglion oticum*, all the nervous branches in question, viz. the *Nervus pterygoideus internus*, *Nervus ad tensorem tympani*, and *Nervus ad tensorem palati*, arise from the third branch of the *Nervus trigeminus* ;—the *Nervus pterygoideus* coming off immediately from that branch, whilst the last two are in every case branches of the *Nervus pterygoideus.*

The preparations on which the above description is founded are preserved in the Anatomical Museum of the University of Berlin, and are open to the inspection of every one who is interested in this subject.

Art. VI.—*Remarks on Hiccup, its Causes, and Cure.* By Thomas Shortt, M. D., F. R. S. E., Fellow of the Royal College of Physicians, and Physician to the Royal Infirmary of Edinburgh, formerly Physician to His Majesty's Forces, and Physician Extraordinary for Scotland, &c.

Lieutaud and Sauvages regarded hiccup as an affection sufficiently important to receive a place in their nosological lists; and their example was followed by Linnæus, Vogel, Sagar, and other writers. For this, however, they incurred the censure of Cullen, who regarded hiccup, as in all instances, and under all circumstances, a mere symptom indicative of some other primary disorder, and therefore to be expunged entirely from the list of idiopathic diseases.

It is impossible to deny that in a large proportion of cases this idea is perfectly correct; and, moreover, would be universally so, could we in all instances trace this distressing affection to another primary cause. Even the varieties of hiccup enumerated by Sauvages show the general accuracy of the opinion of Cullen; and it is only singular that Sauvages should have persisted in erecting into a separate disease a deranged action, which is merely symptomatic of so many other affections, were we not aware that his was the first attempt at nosological arrangement, and, perhaps, therefore, not to be regarded as at once attaining the accuracy of a perfect system.

But while Sauvages and his immediate followers have gone too far to one extreme, Cullen has undoubtedly, in his anxiety to avoid error, fallen into the opposite one. The physician occasionally meets with cases of hiccup which he cannot trace to any one of the causes specified by Sauvages, or to which it has been ascribed by the observation of the ablest pathologists. But Cullen overlooked an important distinction in this disorder, originally established by Lieutaud, whose merits were certainly underrated by him; Lieutaud, admitting that hiccup, when temporary, as occurring in the course of acute diseases, has been expunged from the list of diseases, whilst that which is chronic, and continues to harass patients for years, is of a very different character.*

Although hiccup, as an idiopathic disease, is seldom in itself dangerous, it is often of long duration, and frequently occasions the most distressing feelings to those affected with it, and is often very unmanageable. It is on this account probably that it has been deemed by Heberden and others sufficiently important to receive a place among those affections which demand special attention. Authors further have reported cases in which it was inferred to be the sole cause of death, where no appearance of this affection was satisfactorily explained by dissection, a fact from which it would seem that the seat of this disease has not been understood.

It is certainly, however, most frequently met with as a symptomatic affection, as in the advanced stages of fevers and visceral diseases, when it not only portends mischief, but, by counteracting the influence of powerful remedies, it speedily hastens death; and, but for the exhaustion produced by the severity of the spasms, such a termination in many cases might have been prevented. I have had occasion to witness many distressing instances of this affection both at home and abroad, and therefore consider it of great importance in itself, and as a symptom in the treatment of those diseases with which it is connected, and as requiring the most prompt attention on the part of the physician and surgeon, whose utmost efforts should at once be directed to its removal.

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* "E Morborum albo expungitur singultus vulgatissimus et fugax: sed aliter se res habet de diuturno et chronico, qui nonnullos ægros in vitæ discrimen habet."—Synopsis, p. 197. Amstelodami, 1765.

If it appears on the decline of fevers, and at the commencement of eruptive diseases, in some instances it may be regarded as salutary, when it usually presents a clear open character, proceeding as it were from strong convulsive motion of the diaphragm,—as also in the intermediate moments between the threatening of death and the beginning of reaction in cholera, considered by Drs Russell and Barry as announcing the return of circulation.

Occurring in hysteria, colic, flatulence, worms, suppressed *menses*, on the sudden disappearance of cutaneous eruptions, in irritations of the mucous membrane of the alimentary canal, dentition, repletion of the vascular system, uterine irritations, swelling of the *fauces*, in affections of the kidneys, in some cases of fractured ribs, and at the commencement of *gastritis* and *hepatitis*, although often curable, it will always be found to aggravate symptoms, and perplex the practitioner. But an obscure and suppressed hiccup, especially when succeeding pain at the stomach, or accompanied with tension of the *hypochondria*, and with signs of congestion of the brain, liver, or spleen, and in delirium and difficulty of breathing in fevers, after great loss of blood and other evacuations, which have produced great prostration of the vital powers, is generally an unfavourable if not a fatal sign. In hernia also, in the latter stages of internal inflammation; in cases of poisons, whether externally or internally applied; in cases of external or internal gangrene; inflammations of the spinal chord and its investing membranes; or in their terminating in softening of the *medulla oblongata*, in injuries of the brain; in inflammation and accidents affecting the diaphragm; ulcerations of the stomach and bowels; and in the advanced stages of dropsies, it is for the most part a sure prognostic of a fatal termination, and little likely to be influenced by any means we can employ as far as the life of the individual is concerned.

Hiccup, under all its forms, is purely of a spasmodic nature, and consists of a sudden, rapid, and brief inspiration, in which the stomach and diaphragm are drawn upwards, in which the whole of the respiratory muscles are concerned,—totally, however, independent of the will, and accompanied by a loud sound, occasioned by the rapidity with which the air enters the larynx, while the *glottis* is constricted by its muscles; the diaphragm is again drawn quickly downwards, but without affecting respiration, from its sudden movement emptying the air-cells of the lungs;—and a total relaxation of the different parts concerned follows; and these symptoms are at times succeeded by an uneasy sensation at the *præcordia*, often amounting to pain. There is evidently a decided analogy between it and sobbing, which often ends in hiccup; but the returns of spasm in the latter are less frequent. In both the muscles of the abdomen are unaffected, being merely pushed forward during the fits, and return without effort to their places after each convulsive movement.

It would appear that the female sex is more liable to it than the male, especially during pregnancy; and the same liability exists in childhood, also in old age, and in dissipated habits, originating, no doubt, from impaired digestion. But the most trifling causes will excite it in those predisposed to it, as swallowing quickly, and drinking very cold or hot fluids, owing to the preternatural irritability of the stomach, or greater tendency to functional derangements. But when it occurs symptomatically, no sex, nor age, nor temperament, is altogether exempted from attacks.

The predisposing causes of hiccup appear to be *hysteria* fatigue, intemperance, long fasting, excessive venery, depressing affections of the mind, constitutional debility, excessive evacuations, infancy, old age, and pregnancy. Yet it often occurs without our being able to assign any apparent reason. The exciting causes may be chiefly referred to crying, sobbing, coughing, laughing, vomiting, and to disordered states of the stomach and bowels, and many of the diseases already enumerated, which it is unnecessary to repeat; whilst the proximate cause may be fairly considered to arise from irritation, congestion, or inflammation of the phrenic nerves, or their *ganglia*; and in support of this opinion, it may be stated, that experiments have proved, that, by irritating the phrenic nerves, convulsions of the diaphragm are induced. Since disease and symptomatic affections, therefore, depend on remote as well as immediate causes, it is easy to account for the production of symptomatic hiccup by derangement of other parts, however distant, whose nervous influence are connected with the diaphragm; and to perceive that symptomatic affections long-continued, or frequently renewed, even produce actual disease in remote organs; while it is certain that such affections are only communicated through the nervous system, and that they may exist without the circulation being affected.

Thus it is well known that worms in the intestines produce affections of the chest and *dyspnœa*;—that irritations of the bowels will lay the foundation of *hydrocephalus internus* and epilepsy;—that irritation of the eighth pair of nerves will, after a time, affect respiration, and, by suspending it, produce death;—that a calculus in the ureter will occasion pain and inflammation of the testicle; diseases of the hip-joint bring on pain and tenderness of the knee; and that injuries of the head are often followed by inflammation and abscess of the liver, lungs, and other distant regions.

The phrenic nerves, therefore, being connected with the accessory nerves of Willis,—the superior and inferior respiratory nerves,—the internal thoracic and great intercostals forming the cœliac, hepatic, splenic, superior, inferior, and posterior mesenteric, renal, hypogastric, and spermatic plexuses, will readily account for hiccup so often occurring under various forms of disease.

The cure of hiccup consists in bleeding and cupping in plethoric habits,—in vomiting and purging when the disease depends on disordered states of the stomach and bowels, followed by large doses of alkalies, to remove acidities of the stomach and *duodenum*,—and when it arises from spasm, which is by far its most common cause, by the use of the warm bath, narcotics, especially opium,—antispasmodics, such as Prussic acid, valerian, musk, camphor, castor, bark, assafœtida and arsenic, and counter-irritants or rubefacients, as blisters, sinapisms, poultices of garlic and hemlock, warm plasters and anodyne frictions to the *epigastrium*. When occasioned by debility, it is more successfully opposed by stimulants, such as turpentine, ether, ammonia, oil of anise, mint, cloves; also wine and spirits freely employed.

Sœmmering recommends blisters between the shoulders; but the most powerful means, so far as I have had any opportunity of judging, appears to be that of blistering the surface from the neck over the origin and course of the phrenic nerves, for which purpose the blister is applied nearly round the neck to secure its position, and to cover fully the different parts concerned. To illustrate the effects of this mode of treatment, I subjoin the following cases as they they occurred:—

Case I.—J. D. æt. 48, complains of severe pain of epigastric region, which is very tender to the touch; has constant vomiting of a green bilious fluid, and unceasing hiccup, which is very distressing; has constant desire to go to stool, but no pain or straining; suffers much from frequent spasms of the right leg stretching down towards the great toe; skin cold, and of a yellow hue; pulse 84, soft, and easily compressed; tongue very foul, and brown. Took ill six days ago with pain of abdomen and much purging. Hiccup and vomiting came on four days ago.

On being first seen a blister was applied to the abdomen; and, as the stage of collapse had considerably advanced, brandy and opium were administered. The feet and legs were fomented, after which he had a full dose of calomel. The following day little improvement took place. The brandy and opium were continued, and large doses of carbonate of iron were given for several days; but, although reaction took place, and the vomiting subsided, the severe hiccup continued as before. On the fifth day after admission, a blister was applied round the neck, and, as soon as it began to affect the skin, the hiccup ceased, and did not return.

CASE II.—J. S. ætat. 50, abdomen considerably swollen, but without fluctuation; has pains in the loins, descending down the left thigh as far as the knee; urine diminished; no swelling of the legs; has occasional slight pains on the right side of the chest on full inspiration or on coughing; no expectoration; skin rather hot; tongue dry; bowels slow; pulse 92; respiration 36; sleeps ill; urine scanty; has pain in making water; urine of a deep-red colour, and coagulates on being heated; specific gravity low.

Was under treatment about nine days ago with similar complaints. The present attack recurred six days ago, in consequence of exposure to cold. This patient was bled to the extent of forty ounces in all, and freely purged. Hiccup appeared about the third day. On the fifth a blister was applied round the neck, when this symptom disappeared; but he gradually sunk a few days thereafter.

Appearances on dissection.—The liver was in a state of unusual induration; gall-bladder distended with dark bile; the right kidney much larger than natural, but apparently healthy in structure; the left completely out of its natural place, being seated over the left brim of the *pelvis*, and contained fluid like urine; the tubular and cortical substance almost entirely removed. Examination of the head and neck refused.

CASE III.—D. L., æt. 45, received a severe blow over the left mastoid process, that occasioned great headach and some degree of deafness on that side, accompanied by considerable constitutional derangement. In a few days thereafter severe and distressing hiccup supervened. He was largely bled and well purged, which relieved the headach; but the hiccup continued with unabated violence. The extract of Belladonna was freely applied over the part affected, and along the course of the phrenic nerves in the neck, and continued for several days, during which period the pupils of the eyes were dilated, but no relief of hiccup followed. A blister was then put round the neck, when the hiccup ceased, and the patient was then in a short time restored to health. The cervical *vertebræ* were minutely examined; but no pain was occasioned by pressure; nor could any swelling or enlargement be perceived in that situation.

The following case, though not an instance of hiccup, showed so remarkable a spasmodic affection of the organs of respiration, and, after the unavailing employment of all the ordinary remedies, was so effectually cured by treatment on the same principle, that I think it deserves being classed with those already given.

Case IV.—F. J. D. æt. 10, was seized about three months ago with a spasmodic affection of the diaphragm and respiratory muscles of the chest. It resembled a combination of coughing and sneezing more than hiccup, as the violent effort, consisting of the irresistible and involuntary expulsion of air from the windpipe, was produced during expiration; but the loud sonorous sound of the former did not exist, and no irritation of the nasal nerves was at any time apparent; while during the attack the lower jaw was invariably drawn upwards and forwards, as in sneezing. There was no expectoration nor discharge from the nostrils at any period of the complaint, nor could the fullest inspiration ever produce the spasmodic action of the diaphragm and other parts concerned in this affection.

These attacks, besides, were totally unconnected with the will of the patient, who never could produce it when desired; but some emotions of the mind seemed to influence it, and it could be occasionally produced by running quickly up stairs. No affection of the bronchial membrane or lungs could be recognized,—no enlargement of the liver or spleen could be traced,—nor could any other visceral disease be detected,—nor could any pain be produced on pressure of the spinal column from the head downwards, or any fulness or enlargement about the *vertebræ* be perceived. The pulse and breathing during the intermissions were natural, and the general health and appetite during the whole course of the disease were unaffected.

In the early stage of the disease the violent spasmodic action was most severe in the morning, commencing generally about five o'clock, and lasting for three hours almost without intermission. During the day, however, the fits were less frequent, and seldom lasted for many minutes. At night the sleep was natural and uninterrupted. In the course of a few weeks the morning attack lasted only from half an hour to an hour; but these violent convulsive efforts were often as many as 330 in twenty minutes, when relief was obtained as if from exhaustion, and the disease then followed its usual daily course.

In attempting the cure of this affection, it was considered advisable, as the tongue was foul and loaded, to clear out the stomach and bowels by emetics and purgatives, which, though liberal, failed to produce any effect on the disease. A blister to the neck was then suggested, but, as the remedy was a severe one in so young a subject, delay was urged, that other means might be proved; and as it was suspected from the enlargement of the tonsils and relaxation of the upper part of the throat that thickening of the *glottis* might exist, as the little patient had been repeatedly and recently attacked with croup, an alterative course of mercury was prescribed, with stimulating and astringent applications locally, such as cayenne pepper and catechu, with mustard poultices externally, but these also failed in removing the prominent disorder.

Equally inefficient were narcotics and antispasmodics largely given,—as opium to the extent of a grain at bed-time, and repeated during the morning paroxysms. The throat at the same time was surrounded with flannel cloths dipped in tincture of opium, and hemlock poultices were applied round the neck. The chest and spine were rubbed night and morning with anodyne liniments, valerian, assafœtida, henbane, hemlock, and musk. Hydrocyanic acid was exhibited internally, and quinine that could be depended on was given to the extent of fifteen grains during the day and night, but without any relief. Frequent warm-baths besides were used at different times. A garlic poultice to the *epigastrium* appeared after three nights' application to relieve the patient for a few days; but as it was afterwards tried on the symptoms returning with their former violence without the slightest effect, it was considered as inefficacious.

The application of a blister, so as to affect the origin and course of the phrenic nerves down the neck, was at length agreed to by the parents, and readily acquiesced in by the little patient from the sufferings he had undergone. It was applied at ten o'clock in the morning. In five hours the spasmodic fits ceased entirely for about thirty hours; and although they returned slightly during the day, no severe morning attack has since appeared, and by keeping open the blister for ten days, the disease is now so completely removed as to require no further remedies.

Dr Hamilton Junior, the distinguished Professor of Midwifery in this University, attended with me in this case, and it has been since seen by Dr Craigie, one of my colleagues in the Royal Infirmary.

The above cases doubtless show the immediate and decided effect produced in hiccup, by blistering the origin and descent of the phrenic nerves in the neck. The first and fourth cases were evidently instances of idiopathic affections; whilst the second certainly proceeded from extensive organic abdominal disease;—yet in all the remedy was equally efficacious.

It remains, therefore, for future trials to decide how far the conjectures now given are correct; and whether the assumption, that congestion or inflammation of the phrenic nerves exist in cases of long standing, can be borne out by dissection. In recent instances, of course, proceeding from mere irritation, any change of structure or appearance cannot be expected. As the subject is one of interest, from the great exhaustion this affection occasions, thereby diminishing the hope of recovery, which, in many instances, might otherwise be fairly calculated on, it may merit the attention and consideration of the profession at large, as, by extensive experience only, can the effects of this mode of treatment be satisfactorily determined.

Note.—I saw, along with Dr Shortt, the subject of the foregoing case, No. 4, on the 9th February; and found him in good health, and perfectly free from the singularly urgent cough with which he had been so long harassed. From the accurate and intelligent description of the mother of the young gentleman, the cough, or rather involuntary and spasmodic expiration, was of a most violent character, and lasted every morning for two hours, during which it was repeated perhaps at the rate of 100 times in the minute. The application of the blister removed it permanently and effectually.—EDITOR.

ART. VII.—*Tenth Report of the Edinburgh Surgical Hospital, from August* 1832 *to February* 1833. By JAMES SYME, Esq. F. R. S. E., &c.

THE number of patients who have applied at the Hospital since the date of last report is 1202, 128 have been admitted into the house, and the remainder treated at home. There have been eight deaths in the Hospital from the following causes:—

Apoplexy.—John Macpherson, aged 55. Admitted on account of *paronychia.*

Ruptured Intestine.—David Wilson, aged 20.

Pleurisy.—Robert Macready, aged 19. Admitted on account of axillary abscess.

Hydrothorax.—Mary Guy, aged 50. Admitted on account of incurable carcinomatous *mamma.*

Phthisis.—James Porteous, aged 32. Admitted on account of *phimosis.*

Fracture of the Cranium, with wound of the Brain.—Niel Mackay, aged 28.

Inflammation of the Bowels.—John Walker, aged 25. Admitted on account of ulcer of the leg.

Burn.—Janet Mackintosh, aged 7.

Before proceeding to notice particularly the cases that have occurred within the period to which the present report refers, it seems right to mention, that the excision of the shoulder-joint related in the last one has not terminated favourably. The patient, though he suffered little from the operation, did not recover from the bad state of health which existed previously to it. On the contrary, he became thinner, and more haggard-looking, his voice sounded hollow, and he suffered from frequent cough, muco-purulent expectoration, and night-sweats. The wound healed by the first intention, with the exception of an old sinus, which often seemed on the point of closing, but never did so completely. He died at home on the fourth month after the operation. On dissection, the lungs were found cavernous and hepatised throughout. The end of the *humerus* was sound, but the *scapula* displayed several carious parts in the line of the inferior *costa*. It is hardly necessary to observe, that the result of this case affords no argument against the operation of excision, as amputation could not, under the local and constitutional circumstances of the patient, have had a more successful issue.

In relating the following cases it may be convenient, for the sake of reference, to arrange them according to the part of the body affected.

Head and Neck.

Fracture of the Skull, with Abscess of Brain and Epilepsy.—William Kilgour, aged 22, from Dunfermline, admitted 3d September. Between six and seven years ago he suffered a very severe wound of the face from the blasting of a rock. He was at first insensible, and considered in a hopeless state, but gradually recovered so as to be able to follow his employment of a weaver. A small opening, however, between the cheek-bone and ear continued to discharge matter, and he occasionally suffered much pain in his head. During the last four months he had had occasional epileptic fits. On examination, it appeared that the malar bone had been fractured; and the whole upper part of the face was occupied by a dense cicatrix. A piece of bone was felt at the bottom of the sinus, bare, and lying obliquely in respect to the surface of the skull. On the supposition that this was a portion of the cranium, which had been depressed at the time of the injury, a crucial incision was made through the cicatrix, to expose the aperture of the skull, which was then enlarged by means of cutting-forceps, so as to admit the extraction of the loose piece. It comprehended both tables of the bone (temporal,) and was about third the size of a sixpence. The patient expressed much relief after the operation; but the fits still recurred, though seldom; and a profuse discharge issued from the wound. A probe being gently introduced, entered to the depth of two inches perpendicularly, the substance of the brain seeming to have been hollowed out into an abscess. He returned home, and continues in the same state, though, on the whole, improved.

Punctured Fracture of Cranium. Recovery without Operation.—Edward Cochrane, aged 18, August 19, applied on account of a small punctured wound of the scalp, in the centre of the coronal region, which he attributed to striking his head on a beam of wood above him, about a week before. On introducing a probe, it was found that a perforation existed in the bone; and when the instrument was withdrawn, some matter issued, apparently from under the skull. He was taken into the Hospital, in order that the symptoms which seemed likely to occur might meet with timely attention. In a few days he began to complain of headach, with loss of appetite, while a frequent pulse, foul tongue, hot skin, and increased discharge from the aperture, afforded still stronger evidence of irritation of the *dura mater*. It was then proposed to remove the injured bone by means of the trephine; but this the patient declined; and he insisted upon leaving the house. Two days afterwards he sent for me, finding himself getting worse, and desiring to have the operation performed. For this purpose, he returned to the Hospital on the following day. He then seemed somewhat better; and it was thought right to delay. He progressively improved afterwards, was dismissed on the 10th September, and has contined well ever since.

Fracture of Cranium, with Wound of Brain and Hernia Cerebri. Fatal.—Neil Mackay, aged 28, December 8th, was admitted at midnight, two hours after having been knocked down in the street, seriously wounded, by striking his head in falling on an iron hook which projected from the wall. There was a wound about two inches long in the right parietal region, between the lips of which some pieces of brain were lying; and it was reported that a larger portion of it had been observed on the ground by the people who raised him. He was cold and insensible, with a weak pulse about 60. Bottles of warm water were applied to the feet; a little spirits and water administered from time to time. He became sensible about an hour after admission, but remained very confused. Eight o'clock on the following morning, his pulse being 95, and strong, fourteen ounces of blood were taken from the arm. The wound of the scalp was dilated; and a large piece of bone, depressed obliquely inwards, was extracted, together with a quantity of matted hair. He continued sensible, and made no particular complaint for the two following days. He had regular evacuation of his bowels, ut rejected food, and exhibited a remarkably pale and cadaverous appearance. He then became restless, his left arm and leg were paralysed, and his right arm was strongly contracted. Bleeding and other means were used in vain; he became quite insensible, with laborious breathing, and died on the evening of the 12th.

On dissection, a dark-coloured mass, about the size of a walnut, was observed to project from the opening of the *dura mater*, through that of the cranium; and when a section was made through it, together with the subjacent brain, the convolutions of the latter expanded, softened, and injected with blood, could be distinctly traced into the tumour, the principal part of which, however, was composed of coagulated blood. The right hemisphere of the brain was much collapsed, and covered with a pretty thick *coagulum* over its whole surface. The cerebral substance in the immediate neighbourhood of the injury was reduced to a pulpy consistence, and tinged of a blood-red colour. In other parts it presented nothing remarkable.

The first of these cases illustrates the bad consequences of punctured fractures, when the depressed fragments are not removed in the first instance. The second affords an exception to the general rule, that such injuries, unless so treated, are always followed by serious disturbance of the cerebral membranes or substance, but ought not to invalidate the general induction of experience, and render doubtful the propriety of applying the trephine in similar cases, if an opportunity is afforded, immediately after the infliction of the wound. The third case is chiefly interesting, in so far as it confirms the now generally received opinion of the nature of *hernia cerebri*, which has been the subject of dispute. There can be no doubt, from the observations on record, that such excrescences depend upon softened cerebral substance mixed with blood; and their production seems referable not to mere exposure of the brain by removal of its coverings, nor to inflammation of it, nor to effusion of blood into its texture, but to a combination of all these circumstances.

Fistula Lacrymalis, treated by introducing a tube, with success.—Jane Penman, aged 41, Newbattle.—The usual treatment of obstructed lacrymal duct, with or without fistula, by means of a style, is very unsatisfactory, as the relief thus obtained is seldom complete, and almost never permanent. The objection to employing a tube is the irritation to be expected from its presence, and the difficulty of withdrawing it after being lodged in the passage. As this method is in all other respects superior to any that has been devised hitherto, it is of importance to determine how far the anticipated danger of bad consequences is real, and therefore cases ought to be recorded in order to decide the question. The subject of the present case suffered no inconvenience whatever from the operation, and was immediately relieved by it from her former complaints. She returned from the country (eight miles distance) some weeks afterwards, to show that she continued quite well, and has not applied since, though strictly enjoined to do so in case of feeling any uneasiness.

Double Hare-lip in an adult remedied by one operation.—Norman Robison, æt. 17, Dysart, admitted September 20th.—In this case there was no malformation of the jaws or palate, and the portion of lip which lay between the two fissures, though it presented a nipple-like appearance, being of a triangular form, and shorter extent than the parts on each side, was natural in its consistence and connections. The respective edges having been rendered raw by removing a slice from each by means of a sharp-pointed knife, a needle was passed through them, so as to transfix the apex of the intermediate portion, which was about midway between the nose and edge of the lip. Two other needles were then introduced, one being close to the *prolabium*, and the other at the margin of the nostrils. The edges of the wounds were brought into exact contact by threads applied round the needles. They united completely by the first intention, and the patient was dismissed with a greatly improved appearance on the 2d of October.

Single Hare-lip in an adult.—John Scott, æt. 21, Selkirkshire, admitted January 8th.—In this case there was a fissure of the palate throughout its whole extent, and considerable irregularity of the adjoining edges of the alveolar process. The operation had been performed when he was two years of age, but failed, owing to his restlessness afterwards. One of the incisors, which projected between the edges of the fissure, having been removed, the corresponding surfaces were prepared for union in the usual way with the knife, which was rather difficult, in consequence of the induration of the cicatrices that had resulted from the former attempt. A needle was introduced close to the margin of the lip, and then two stitches of the interrupted suture were employed to draw the remaining portion of the edges together, as the latter means seem less apt to occasion troublesome ulceration than the twisted suture, when the parts to be joined are put upon the stretch. The cure was completed without any unfavourable occurrence, and the patient returned home on the 21st.

Hare-Lip in a Child—Malformation of the Jaw—Operation postponed.—Grace Crerar, æt. 2, Kenmore, admitted August 30th.—This was one of those cases in which the central part of the superior maxillary bone is produced into a round knob, having the corresponding portion of lip attached to its anterior surface and to the *columna nasi* in the form of another similar, but smaller knob. Behind this projection there was a very broad fissure, or rather deficiency of the palate, throughout its whole extent. As the intermediate portion of lip could not be rendered serviceable, owing to its situation and connection, it was removed, together with the malformed part of the jaw, and then the cheeks were drawn together by means of adhesive plaster, so as to prepare them for permitting the edges of the lip to be united. After a careful trial of this plan for several weeks, it appeared, that no material advantage had been obtained, the child being so strong and unruly, as to render it impossible, even with the hands, to retain the sides of the fissure in approximation; and it was therefore judged prudent to delay making any attempt to effect adhesion until the child acquired more docility, and until the two halves of the jaw became closer, as they might be expected to do in course of time, after the removal of the central portion.

Tumour of the Lower Jaw removed with success.—Margaret Walker, æt. 26, Cupar, admitted November 13th.—The morbid growth occupied the gum and alveolar process of the incisor teeth. It was the size of a small walnut, and possessed a firm consistence, pretty smooth surface, and dark colour. It projected equally on the inner and outer sides of the jaw, and appeared to be deeply rooted, as all the cutting teeth were loose. The patient stated, that the tumour began to grow nine months before, and had gradually increased. It being resolved to make a very free removal of the diseased parts, the two canine teeth were extracted, after which an incision down to the bone was carried completely below the base of the anterior surface of the tumour, the bone that lay between the sockets of the canine teeth was divided by a pair of strong cutting forceps, and then the remaining attachments were readily separated with the knife. The wound healed perfectly; and it was suggested to the patient, that, when the parts became quite callous, she might have the six teeth that had been removed, which were all quite sound, artificially fixed to the jaw.

Acute Swelling of the Tongue, threatening Suffocation, remedied by fomentations and purgatives.—Thomas Nicol, æt. 19, Edinburgh, admitted January 2.—My assistance was required late in the evening on account of this patient, whom his friends represented as in danger of immediate suffocation, owing to an enlargement of the tongue which had suddenly taken place. He had been exceeding very much in the use of ardent spirits for some days previously, and had been exposed to cold.

The tongue began to swell on the preceding evening, and had rapidly increased during the day. It was found on examination, that, though the tongue was very much enlarged, and otherwise altered in its appearance, being of a globular form, and quite dry on the surface, it did not much impede respiration. Instead, therefore, of making the deep longitudinal incisions recommended by M. De La Malle,* which have been found the most effectual remedy in such cases, it was thought sufficient to prescribe fomentations to the throat and an active purgative, with instructions that the patient should be carefully watched during the night, lest more efficient means might become necessary. Next morning he felt much easier, and was able to articulate with tolerable distinctness. The tongue was moist, but still retained its globular form. The same treatment was continued, and with success, so that, on the following day, hardly any trace of the disease could be perceived.

Ligature of the Carotid Artery on account of Hæmorrhage from the Ear and Fauces.—Though this case was not treated in the Hospital it deserves to be related, from the unusual circumstances with which it was attended. I am indebted to Mr Cheyne of Leith for the following history of it:—

"William Mason, a delicate boy, 9 years of age, complained in the latter end of August 1832 of a soreness in the left *fauces.* This ceased in two days. About a week afterwards, viz. on the 29th August, he was seized with pain and swelling of the right *fauces* and smart accompanying fever. The fever left him in a day or two, but there remained a painful external swelling situated between the upper part of the larynx and the mastoid muscle. This increased gradually, extending upwards to the jaw, and finally to the tube of the external ear.

On the night of the 8th September a discharge of pus took place from the *meatus externus* of the ear, and it continued till the following evening. A tea-cupful probably was the quantity altogether discharged. The latter portions were tinged with blood. Soon after the discharge of pus had ceased, the ear having been lightly bound up, the boy raised an alarm in consequence of a flow of blood from the ear. Upon removing the bandage it continued profuse for a short time. It then ceased. Some ounces appeared to have been lost. A compress and bandage were applied. The swelling dependent on the abscess had disappeared entirely.

13th.—A fresh bleeding from the ear. Sponge introduced with compress and bandage over it. Since the 9th, (the date of the first bleeding,) a swelling has been formed between the angle of the jaw, mastoid process, and external tube of the ear, it has no pulsation.

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* Mem. de l'Acad. de Chirurgie, T. v.

16th.—The swelling considerably increased; it now extends downwards bordering on the *larynx*. On examining the mouth, a swelling is perceived like that produced by an enlarged tonsil pushing forward the anterior curtain of the palate, and insinuating itself between the jaw and lining membrane of the mouth: it is rather pale in colour, soft and elastic. The following symptoms are present: considerable difficulty of breathing and swallowing, imperfect articulation, frequent hawking of phlegm from the throat, difficulty of closing the jaws, difficulty of lying down, very uneasy expression of the countenance, with constant watering of the eyes. The pulse of the temporal artery to be distinctly felt.

18th.—In the evening he discharged suddenly from the mouth two or three ounces of florid blood. For a day or two before this the phlegm from his throat had been tinged with blood. The case appearing to be one of extreme hazard, and the object of present apprehension, hemorrhage, likely to be fatal, either by its quantity or through the vicinity of the *trachea* by causing suffocation, it was suggested by Dr Combe to tie the common carotid artery, and this operation was proposed to the parents. They, however, did not accede to it at that time. It was then agreed to request Mr Syme's opinion on the case. Mr S. having approved of the measure, it was again recommended (by him) to the parents, who now consented to it. The artery was then tied at the side of the larynx by Mr Syme.

October 1st.—Immediately after the operation an improvement in all respects took place, and has been gradually increasing till to-day. The operation itself gave rise to no inconvenience which would not have resulted from a simple wound of the parts. The external swelling decreased quickly, and is now gone. There still remains a slight internal swelling in the situation of the tonsil. No pulsation of the temporal artery. Since the first bleeding at the ear, there has always been an oozing from it of a thin bloody ichor.

On the evening of this day, while he was reading aloud, a profuse bleeding took place from the internal *fauces*, and at the same time from the ear. It soon ceased. About ten ounces were discharged in all. On examining the mouth some clotted blood was seen adhering to the right tonsil. He had been allowed incautiously to go out of doors in the forenoon, and had run about without restraint.

2d.—A tumour equal in size to the half of a hen's egg has been formed since last evening between the angle of the jaw, mastoid process, and tube of the ear. There is no increase of the swelling in the mouth.

6th.—The external swelling decreased in some degree. There has been no discharge of the ichorous fluid from the ear since the 1st inst.

In the evening a fresh discharge of blood from the internal *fauces* and nostrils, (from one source, however, the right side of the *fauces* as it appeared.) It soon ceased, but not before about twenty ounces were lost. Immediately after he had syncope. In two hours he had rallied, and was asleep with a pulse at 120.

8th.—In the evening, a bleeding from the *fauces* to the amount of eighteen ounces, followed by faintness and very small pulse.

After the 8th there was no return of bleeding, the swelling decreased, and he gradually recovered. For some time the right tonsil appeared of a dark colour.

He is now as well as before the commencement of his illness.

Decr. 14, 1832."

Punctured wound of Throat.—Joseph Campbell, aged 17, Edinburgh, admitted January 1st.—The patient was pursued by another boy, who inflicted various wounds in different parts of his body with a penknife. None of them were of any consequence, except one in the neck, where the knife had entered directly over the great vessels, but fortunately, instead of penetrating to them, had been turned towards the *larynx*, into which it appeared that an opening had been made, as there was a slight emphysematous swelling in the neighbourhood of the wound. He was bled, and kept on low diet for a few days, at the end of which he felt in all respects quite well.

Cut-Throat—Recovery.—James Paterson, æt. 46, Edinburgh, admitted January 9th.—The wound was inflicted with a razor, and literally extended from ear to ear. The *larynx* was exposed, but there was no opening into it or the *pharynx*; and the bleeding, though copious, did not proceed from any considerable artery. After the hemorrhage had nearly ceased, a few stitches were introduced, and the patient's head was supported so as to press the sides of the wound together. They healed chiefly by the first intention, and the patient was dismissed cured on the 29th of the same month.

Wry-Neck, depending on contraction of the Sterno-Mastoid, remedied by division of the muscle.—Matthew Cullen, æt. 6, Dunbar, admitted November 2, 1832.—The head was much inclined to the left side, and could not be elevated, owing to the rigid contraction of the left sterno-mastoid, the sternal part of which felt like a tense cord. The complaint had existed upwards of twelve months, and had resisted blisters, with other similar means of remedy. The introduction of needles having been tried without any benefit, it was thought necessary to divide the contracted part of the muscle. This was effected by entering a sharp-pointed narrow knife a little nearer the *trachea* than its sternal margin, about an inch above the clavicle, and then pressing the blade against the tense fibres. A sudden snap, which shook the patient's frame, was immediately perceived, and all trace of the contraction disappeared. The knife was withdrawn, and the small puncture occasioned by it in passing through the skin afforded the only perceptible indication of what had been done. No pain or other bad consequences followed, and the cure might be regarded as at once complete.

Thorax.

Necrosis of the Clavicle.—John Henderson, æt. 26, Forgan, Fife, admitted January 21, 1833.—Sixteen weeks previous to the time of his admission he made a violent exertion in raising a cart that had been overturned. No inconvenience was immediately perceived, but a few days afterwards the upper part of the chest between the shoulder and *sternum* became the seat of inflammation, attended with great pain, swelling, and redness. Suppuration followed, and an abscess over the clavicle, which opened at the end of two weeks, continued to discharge a large quantity of matter. On examination a portion of the clavicle was found detached, and when extracted by forceps, after suitable dilatation of the opening in the integuments, it measured three inches in length, and comprehended the whole thickness of the bone only for about one inch. Some smaller fragments were subsequently removed, and the patient is now recovering, with the prospect of suffering no permanent deficiency, as the process of ossification seems to be going on vigorously. It was apprehended at one time that the sternal extremity of the clavicle would also have become detached, as a separate abscess had formed over it, and, when opened, presented the surface of the bone in a denuded state. This part, however, is now covered with granulations.

Carcinoma of Mamma.—Alison MacCulloch, æt. 57, Cupar, admitted October 15th. Elizabeth Winter, æt. 45, Edinburgh, admitted November 20th.—The operations in these cases were successful, so far as regarded their immediate effects; and, as they were conducted on the principle of making a careful extirpation of the whole glandular structure, together with as much as possible of the neighbouring tissues, it may be hoped, that the patients, if not permanently protected against relapse, will, at all events, have their existence prolonged.

Cystic Sarcoma of Mamma.—Jane Cameron, æt. 58, Stirling, admitted January 27.—About a year ago she perceived a small tumour in the left breast, on the axillary side of the nipple. It was not painful, but progressively increased in size. At the time of her admission it was fuly equal in bulk to a goose's egg, had a slightly and unequally nodulated surface, and an obscurely fluctuating consistence. At its most prominent part a slight livid hue was perceptible through the integument. The disease being regarded as of a cystic nature, the operation was undertaken with a favourable prognosis as to the permanency of the relief to be expected from it. The gland which adhered intimately to the tumour was taken away along with it to facilitate the operation, and prevent the troublesome oozing of blood that is apt to occur from incisions into the substance of the *mamma*. One artery only required a ligature; and the wound was quite healed on the eighth day. The tumour, when cut open, displayed an unusually perfect cystic structure, there being no solid substance entering into its formation, and merely a collection of cysts, containing a dark-coloured fluid.

Chronic Abscess of Mamma.—Ann Douglas, æt. 58, Auchtermuchty, admitted January 20th.—The right mamma presented a very malignant aspect, being enlarged, indurated, and pointing a little above the nipple. The axillary glands were slightly swelled. The patient persisted in affirming that the disease had not existed longer than a month, and therefore there seemed reason for regarding it as a simple abscess. An incision was made into the prominent part of the tumour, from which a quantity of thick pus escaped, and though the substance of the gland was much indurated the subsequent progress of the case was favourable. Under the use of stimulating liniments and sulphate of zinc lotions, the gland regained its natural consistence, the sore healed, and the patient was dismissed on the 20th of February.

Abdomen.

Ruptured Intestine.—George Wilson, aged 20, admitted 31st August. About seven o'clock in the evening this young man fell from the driving seat of a carriage before the wheels, one of which passed over his abdomen; he was immediately afterwards carried to the Hospital. On admission he complained of intense pain all over the trunk, and dreaded the slightest motion, which greatly aggravated his sufferings. Next morning he was in much the same state, but, on the whole, rather easier. Early in the forenoon he was seized with dark-coloured vomiting, and, sinking rapidly afterwards, died at mid-day, eighteen hours after receiving the injury.

On dissection, thirty hours after death, the *parietes* of the abdomen, both before and behind, were found loaded with effused blood, and in the convex part of the first turn of the *duodenum* there was a longitudinal rent rather more than an inch long. The gut was of a pulpy consistence in the neighbourhood of the injury, and there was a small quantity of intestinal matters effused about it.

Pelvis.

Sinus of the Hip.—Andrew Forbes, æt. 26, Lanarkshire, admitted November 16th.—Some years ago I gave an account in this Journal of several cases in which sinuses of the hip and other parts of the *pelvis*, that had proved extremely obstinate, and existed for years, were found to depend upon the presence of small exfoliations from the bones. Succeeding observations have confirmed the opinion, that such cases are by no means uncommon, and that, when sinuses in this situation resist the ordinary means of remedy, while there is no evidence of their being connected with disease of the *vertebræ* or hip-joint, they may generally be referred to the source in question.

The young man whose case is now to be related applied on account of a chronic abscess at the upper and back part of the left thigh. There was also a smaller tumour seated over the tuberosity of the *ischium*, which seemed to contain a fluid; but the fluctuation was less distinct than in the other, and the two did not seem to communicate. The patient had a thin unhealthy appearance; but was quite free from disease, either of the hip-joint or *vertebræ*, so far as could be determined by a very careful examination. He stated that the swelling in the thigh appeared about two years ago, and gradually increased since; and that the smaller tumour of the hip was first noticed six weeks previous to his admission.

The lower abscess was opened first; and though after this was done the upper one could not be emptied, nor even diminished by pressure, at first, a communication between the cavities was ascertained to exist in the course of the following week; and then a free counter-opening was made with the knife into the upper tumour, which lay over the tuberosity of the *ischium*. When this cavity was examined with the finger, it was found to extend to the bone,—a small part of which could be felt bare and rough, but not moveable. In these circumstances, it seemed right to wait for the improvement that might arise from the free drain that had been afforded to the confined matter. Lotions and pressure, applied so as not to close the orifices of the sinuses, were used; but the discharge continued to be very profuse, and the patient's emaciation increased. Hectic symptoms appeared, and apprehensions were entertained for his safety. An improvement then gradually took place, the discharge diminished, and the general health became considerably better. In this state matters remained until the 24th January, when it was resolved to ascertain the precise condition of the diseased bone. With this view, the sinus of the

hip was dilated with a bistoury, guided by the finger,—which thus obtaining sufficient room, and being urged with considerable force, penetrated between the origins of the muscles, and detected a loose exfoliation, or rather several small exfoliations lying together. The extraction of these was effected with forceps, but not without a good deal of difficulty, owing to the great depth of their situation, and the contraction of the muscles. The patient improved every day after the operation, and was dismissed on the 9th of February.

One of the cases formerly related so closely agrees with this one, that it may be here quoted. "Thomas Irving, aged 28, a cooper in Leith, had laboured under sinuses of the hip for seven years; and latterly become so much reduced in health, as to be regarded by his friends as in a hopeless state.

I found a large diffused abscess occupying the upper and back part of the thigh, and extending from the hip half way to the knee. In the fold between the hip and thigh there was an opening, which allowed the probe to enter fully three inches in the direction of the tuberosity of the *ischium*, and at the bottom of this passage I felt a loose piece of bone. The patient was pale and emaciated. Owing to weakness and pain he walked with difficulty; and the long duration of his complaint, together with its progressive aggravation, rendered him very desponding as to the possibility of recovery.

I made an incision into the abscess, and allowed several ounces of pus to escape. Next day I introduced a long straight probe-pointed bistoury into the sinus, and dilated it to the bottom so as to admit my finger, by means of which I discovered that the exfoliation lay in a cavity between the origins of the flexor muscles of the knee. Having dilated the mouth of this cavity, I easily extracted the bone, which was about half the size of a sixpence.

The patient suffered no bad consequence from this operation, and soon found himself relieved from all his previous complaints In the course of two or three days he walked nearly a mile to show himself, and by the end of two or three weeks was able to resume his occupation.

Some months afterwards he told me that the sinus still discharged a drop or two of matter, and that he occasionally felt a pricking pain at the bottom of it. I examined with a probe, and ascertained that there was a loose fragment of bone, to remove which I again dilated the sinus down to the tuberosity of the *ischium*; again felt that the exfoliation lay in a cavity between the tendons; and again enlarged the cartilaginous orifice so as to effect the extraction. The piece of bone now removed was extremely small, not much larger than a barley-corn. The wound healed directly, and the patient has remained free from complaint."*

Fistula in Ano, complete; repeatedly operated upon without success, from the internal opening being overlooked; remedied by division of the septum between the two orifices.—The patient stated that he had laboured under *fistula* for more than twelve months, and that various severe operations had been performed without relief. When the anus was examined, long cicatrices were observed on both sides of it, and near the verge a small opening, through which a probe readily passed into the gut about an inch above the orifice. While the finger that had been introduced into the *rectum* to assist in this examination still remained, a probe-pointed bistoury was conveyed through the fistula and brought out at the *anus*, so as to divide the *septum*. A little dressing was interposed for two days, and the patient returned home on the 11th December.

Fistula in Ano, with Stricture of the Rectum.—Mary Marny, æt. 51, Dundee, admitted August 22d.—The fistula was complete, and communicated with the gut about an inch distance from the orifice; the stricture being a little farther up, so as to be readily reached with the fore-finger, the point of which it admitted with difficulty. The patient had laboured under her complaints for upwards of two years, and applied with little expectation of relief, as she had been regarded as incurable.

The *septum* between the two orifices of the *fistula* having been divided in the usual way, the dilatation of the stricture was proceeded with, by introducing steel bougies, of gradually increasing sizes, every third or fourth day. The recovery was delayed by a troublesome tendency to diarrhœa; but at length, being advanced so far that little uneasiness remained, instead of the almost incessant and severe suffering formerly experienced, she was dismissed on the 3d of November.

Fistula in Perineo, with Stricture and Calculus of the Urethra.—Robert Reid, æt. 37, Hawick, admitted October 4th.—About twenty years ago, this patient received a kick in the *perinæum*, which occasioned an abscess of this part, and difficulty in making water. When the abscess opened, the urine escaped through it, and had by degrees almost entirely ceased, to pass by the orifice of the *urethra*. Seventeen years ago he was admitted into the Royal Infirmary, where he remained six weeks, and was then dismissed as incurable, it having been found impossible to introduce even the smallest bougie or catheter through the stricture. He continued ever since in nearly the same state as to his urinary ailments; but suffered also derangement of general health, from exposure to cold and wet in the course of his occupation as a mason. He complained of rheumatism, indigestion, and a nervous affection of the face, which destroyed the sensibility of the left side of the cheek and tongue. For some time previous to his application at the Hospital, he had experienced unusual difficulty and pain in making water.

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* Edin. Med. Journ. No. xcix.

On examination of the *perineum*, three fistulous openings were found. The neighbouring integuments were greatly thickened and indurated, so as to present a callous mass, having on its surface irregular cauliflower-looking excrescences, which occupied the space between the *scrotum* and *anus*. The *urethra* was strictured in several places, but particularly at the bulb. A small silver catheter having been introduced into the bladder without much difficulty, the usual treatment of stricture, by means of steel bougies, was commenced. As the patient did not experience relief commensurate with the advance of dilatation, a search was made in the fistulous canals for urinary concretions, and several small ones, like split peas, were extracted. Still the uneasy symptoms continued, and strongly indicating the presence of a stone in the bladder, led to a very careful examination of its cavity, when a small concretion was detected. The process of dilatation being pursued, in the expectation of gaining room for the admission of a moderate sized lithotomy staff, was at length arrested by the calculus which escaped from the bladder, and obstructed the urethra. The principal sinus was laid open with a bistoury, so as to permit the stone to be extracted. It resembled in shape and size a large renal calculus. Some of the callosities in the *perineum* were then removed, and the treatment of the stricture pursued. The patient returned home on the 7th of January, making water in a full stream by the *urethra*, and passing merely a few drops through the *perineum*, which had nearly regained its natural appearance and consistence.

Lithotomy.—Thomas Hewitt, æt $2\frac{1}{2}$, admitted November 21st.—The operation was performed on the 23d in the usual way, and a stone about an inch in diameter extracted. The whole of the urine passed by the *urethra* on the ninth day, and the patient left the Hospital on the 4th of December. I performed the same operation three years before on a half-brother of this boy, *i. e.* a son of the same father, but a different mother.

Though it is now admitted that the opening which is made into the bladder for the extraction of stones should be effected by cutting, and not by tearing, some difference of opinion still exists as to the extent of incision which is requisite for the purpose. With the view of obtaining some fixed data for determining this question, the following experiments were made with the assistance of my friend Dr Sharpey, and verified by repetition. A bladder and *penis* from an adult were freed by dissection from all their surrounding coverings. 1. The membranous part of the *urethra* was divided through its whole extent from the bulb to the prostate. The incision measured $\frac{3}{4}$ of an inch. A pair of small dressing forceps having been introduced into the bladder through this aperture, were withdrawn as much expanded as possible, and the distance between the points of their blades was found to measure $\frac{3}{4}$ of an inch. A bullet $\frac{5}{8}$ of an inch in diameter was introduced into the bladder by another opening, and pressed with great force against the former one, but could not be squeezed through it. 2. The prostate gland was then divided at an angle of forty-five, as in performing the lateral operation, to the extent of $\frac{3}{4}$ of an inch measured on the outside; but as this was done by pushing the knife along a staff into the bladder, the incision of course extended farther on the inner side. The bullet formerly tried could now be pushed through with ease, and also one $\frac{5}{8}$ and $\frac{1}{16}$ of an inch in diameter, but one of $\frac{7}{8}$ and $\frac{1}{32}$ could not be forced through. The whole of the prostate was next divided the length of the incision through the gland, measuring 1 inch and $\frac{1}{4}$. The last mentioned bullet passed out with ease through this aperture, and one of 1 inch, $\frac{1}{4}$, and $\frac{1}{32}$ could be passed through with slight laceration of the neck of the bladder. In attempting to pass larger bodies through the wound it was ascertained that no additional space could be obtained from stretching, and that whatever more room was gained proceeded from rupture of the mucous membrane, and separation of the muscular fibres which did not require much force. It may be observed, that the bullets employed in these experiments were selected at random, and measured afterwards.

Warty Excrescences from the verge of Anus removed by Excision.—David Lindsay, æt. 22, Edinburgh, admitted January the 7th.—The excrescences formed a tumour the size of an orange surrounding the *anus*. The patient had laboured under it for six months, and been treated without benefit for two months at a Dispensary by the application of lotions, &c. The whole of the morbid growths were cut away by curved scissors, and the patient was dismissed quite well on the 26th.

Complicated Tumour of the Scrotum.—John Russell, æt. 70, Edinburgh, admitted December 5th.—The *scrotum* was enlarged to the size of his head. The swelling depended in part upon a reducible inguinal hernia; and the remainder, in nearly equal portions, consisted of a solid mass that seemed to be the testicle enlarged, and of a fluid that was supposed to be contained in the *tunica vaginalis*. The integuments covering the anterior surface of the tumour were inflamed, and at the centre of this part sloughing seemed to be commencing. The patient gave a very confused account of his case; and all that could be learned with certainty was, that he had laboured for many years under rupture and swelled testicle.

Stimulating dressings were applied to the gangrenous part of the scrotum, and the slough was cut away by degrees as the sphacelation proceeded. The sore under this treatment soon presented a clean granulating surface. It was then thought right to draw off the fluid, which proved to be not serum but pus. The opening made by the trocar was then dilated; and it appeared, from the thickness of the *parietes*, that the *tunica vaginalis* must have been greatly thickened, or that the abscess must have been contained within the substance of the testicle. The discharge continuing very profuse and fœtid, the opening was dilated so as to admit a finger, by which some loose substance was felt, and next day a membranous-looking slough presented itself at the orifice of the wound. This, when withdrawn, measured more than three inches in length, and one and a-half in breadth. It presented the appearance that might be expected from a thickened *tunica vaginalis* detached by sloughing. Some smaller portions of a similar nature escaped subsequently, and the tumour not only contracted, but exhibited symptoms of improvement in the diminution of the quantity, as well as fetor of the discharge. Still the opening showed no disposition to close, and another search was therefore made with the finger, when a quantity of gritty matter was encountered, and several pieces of membranous substance, containing a deposition of earthy matter, similar to what constitutes ossification, as it is usually called, of the arteries and other soft tissues. The discharge rapidly diminished after this, and the patient was dismissed cured on the 19th February.

Extremities.

Excision of the Elbow-Joint.—James Topings, æt. 17, Shotts, admitted August 17th.—The elbow was enlarged, and admitted of very little motion. A *sinus* over the internal tuberosity of the *humerus* allowed a probe to reach the bone and enter into the joint. The disease had existed upwards of twelve months, and was becoming progressively aggravated. The articulation was excised in the usual manner on the 1st of September. No bad consequences followed; and the patient was dismissed on the 22d October. He returned some weeks ago to show how well he was, there being no discharge from the wound, and the arm being not only moveable, but already under the voluntary command of the muscles.

Amputation of the Fore-Arm.—Ann Fraser, æt. 23, Edinburgh, admitted 13th September.—This was a case of whitlow of the fore-arm, if the expression may be used. It commenced with intense deep-seated inflammation in the neighbourhood of the *carpus*, which speedily led to suppuration of the bones and joints. The matter pointed on both sides of the arm, and after free openings had been made for its escape, the limb was carefully dressed and bandaged, in the hope that a cure by anchylosis might be accomplished. The discharge, however, instead of diminishing, became more profuse, and the patient's strength declined so rapidly that amputation could not be safely delayed any longer. The operation was performed by double flaps, about the middle of the fore-arm, on the 9th October. The *radius* was found to be dead and detached from the surrounding parts, but the *periosteum* fortunately adhered at the distance of little more than an inch above the place where the bone was first exposed. The patient made a good recovery, and was dismissed on the 16th November. On dissection of the limb, the carpal articulations were found extensively diseased.

Amputation of the Fore-Arm.—Jane Paton, æt. 18, Inverkeithing, admitted 8th July.—The case of this patient was mentioned in last Report as an exception to the general rule, that ulceration of a dense bone, which has been expanded in its tissue in consequence of the irritation resulting from local injury, is irremediable except by removal of the affected part. The similar condition of the shafts of the long bones, which is met with in persons whose constitutions have been injured by the combined effect of mercury and venereal disease, yields to blistering and lotions, such as the black-wash. But I never knew an instance of ulceration occurring in the former way remedied except by amputation. This young woman sustained a kick from a cow on the fore-arm about fourteen months ago. The ulna enlarged throughout nearly its whole extent, while the superjacent integuments ulcerated at several points, where a probe could be pushed into the substance of the bone, no longer of a dense consistence but granular, as if its component particles had suffered disintegration. Before proceeding to amputation, which it was feared would prove the only remedy, a trial was made of blisters, which, contrary to expectation, produced a great improvement. The ulcers closed, and the patient was dismissed as cured on the 24th of August. She returned on the 9th of October nearly in the same state as when first admitted. The blisters were again employed, but not with the same good effect as formerly; and an attempt was then made to remove the disease, by exposing the bone and gouging out the softened part of it. As no benefit was thus obtained, it did not seem right to delay any longer, and the limb was removed immediately below the elbow-joint on the 17th January.

The operation was effected by making a large flap from the palmar or fore-side of the arm, and a small one from the back part. About a week afterwards a profuse hemorrhage took place from the stump very unexpectedly, without any previous complaint, and required the introduction of graduated compresses to correct it, which was not accomplished until two pounds of blood by computation had been lost. She recovered without any other bad symptom, and was discharged on the 19th February.

Amputation of the Thigh.—Elizabeth Scott, aged 6, from St Andrews, 17th October.

This was a common case of white-swelling, which had existed two years, and arrived at its last stage, viz. that of ulceration. On dissection it appeared that the disease had originated in the synovial membrane. The patient was dismissed on the 14th of November.

Contraction of the Arm, from cicatrization of a Burn, remedied by continued Extension.—Ellen Gibson, æt. 10, Edinburgh, admitted September 13th.—The arm was kept bent at an acute angle by a thick and broad cicatrix, which had resulted from an extensive burn caused by the clothes taking fire four months previous to the time of application. A large ulcerated surface still existed on the back part of the shoulder and side; but the object of bringing the girl to the hospital was to get the arm straightened if possible. It was evidently not practicable to effect this by excision of the cicatrix, and the patient was dismissed with a supply of proper lotions for the ulcer. She returned soon afterwards, and had the importance of even a partial removal of the contraction so strongly represented, that it was resolved to make an attempt to effect it by permanent extension. With this view, an iron wire doubled, so that the branches were about an inch distant from each other, and bent to an angle somewhat less acute than that of the elbow, being covered with flannel, was fastened to the arm by a bandage. Every succeeding day the angle of the wire was rendered more obtuse. In the course of six weeks we had the pleasure of seeing it quite straight. The patient was dismissed on the 12th of December, and continues quite well.

Tendo Achillis divided accidentally.—Archibald Pennycuick, æt. 17, Edinburgh, admitted September 20th.—The young man while working with a carpenter's adze, cut across the *tendo Achillis.* The case was treated as one of simple rupture, and healed as readily.

Exostosis from the distal phalanx of the great toe.—One case of this kind occurred, and was remedied by simple removal of the exostosis, without resorting to the severe measure of amputation which has been recommended on such occasions.

Dislocation of the Ankle backwards.—Three cases of this accident presented themselves, and were treated successfully by the method of Dupuytren, which consists in pressing the heel forwards by means of a thick cushion fastened on the back part of the leg from the heel up to the calf, and a splint of wood placed over it, which is drawn towards the leg and foot with whatever force may be found necessary. In all of these cases the *fibula* was fractured. In one of them the bones had been allowed to remain unreduced eleven days, from its being erroneously supposed that this was merely a strain. Owing to the contraction of the muscles that had gradually taken place during this period, very strong extension was required for effecting the replacement of the articular surfaces.

Insects supposed to be evolved from the palms of the hands.—Jane Dunnett, æt. 18, Caithness, admitted 28th December. This young woman came from a remote part of Caithness in the firm belief that a number of small black insects were constantly escaping from the pores of the skin of her hands; and it appeared that many sensible persons, both in and out of the profession, had been persuaded by her sincere, though absurd relation, that her complaint was not imaginary. She was directed to take aloetic pills in sufficient quantity for procuring at least three evacuations of her bowels daily. She soon felt relieved, and her menstrual discharge, which she now confessed had been suppressed since the commencement of her complaint, becoming restored, the cure was complete in the course of ten days, and she returned home, carrying a box of the pills, which she regarded as of inestimable value.

Of many minor operations, such as amputation of fingers and toes, *fistula in ano*, *hydrocele*, polypus of the nose and ears, cancer of the face, tumours, encysted and solid, &c. it does not seem necessary to give the particulars.

Art. VIII.—*Remarks on the History and Etiology of Cholera.* By David Craigie, M. D. Fellow of the Royal College of Physicians, Edinburgh, one of the Ordinary Physicians to the Royal Infirmary of that City, Inspector of Anatomy for the City and County, and late Physician to the Temporary Castle-Hill Cholera Hospital.

In the following observations, which may be regarded as the sequel of the paper in last number, I do not propose to attempt a formal refutation of the doctrine of contagion as a cause of the propagation of cholera, but merely to place before my readers such facts and arguments as may assist them in forming an opinion of the validity of this doctrine. In my account of the epidemic of Newburn, I considered the merits of this question as fully as the history of the disease then admitted; and I have since, in various articles, entered more or less extensively and minutely into the consideration of several other points of the inquiry. I was at one time censured for not coming to an earlier decision of the question. But to this I can make various answers, which are at least satisfactory to myself, and I trust will appear so to unbiassed judges. In the first place, no good could result from any individual stating his own opinions, persuasions, and convictions, in language however strong and decided; and I at all events was determined not to do so without personal examination of those circumstances, which must be regarded as evidence on both sides, and which only could render any opinion conclusive. In the second place, I observed that almost the whole of the public authorities and boards throughout the kingdom, had either positively declared their belief in the contagious nature of the disease, or had in this belief prescribed sanative measures and precautions; and in such circumstances, after a plain and distinct statement of facts and arguments, it must have indicated both arrogance and at the same time imprudent opposition, to say more on the subject. In such circumstances, the result of an expression of difference of opinion could do no good, and might have been productive of injury. In the third place, this course enabled me, during many months observation of the disease, to collect a considerable number of facts on the question of its mode of introduction and propagation in different places.

In the following article I shall consider, 1*st*, the question of cholera being a new disease; 2*d*, the mode in which the first cases took place; 3*d*, the mode in which the disease subsequently spread; and 4*th*, the question of propagation by the dead subject.

I. The first argument by which it is attempted to be proved that cholera is propagated by contagion, is that it is a new disease, and was never known in India before the year 1817, when it appeared in the Delta of the Ganges in an epidemic form. It is very singular that this assertion could ever be made, and more so that it could be repeated, after the distinct statements to the contrary by Mr Jameson. The testimony of various credible authorities can be adduced to prove, that the disease has been endemial from time immemorial in India; and it may be even shown that it has been well known in other countries.

I am willing to admit, that in some instances the peculiar characters of the discharges have been overlooked by some ob-

copious and sudden discharge of fluid from the stomach and bowels, occurring spontaneously, and independent of indigestion.

In his subsequent detail of the causes of the disease, he enumerates a train of symptoms, which certainly make a nearer approach to those of the malignant cholera of the East, than to any other known disease. As the complaint proceeds, he states that the alvine discharge consists of a thin watery liquor, and is sometimes like washings of meat, *(aquati atque tenuis liquoris fit egestio, et aliquando similis loturæ carnis,)* and along with these a whitish frothy or flocculent matter, *(subalbida desputa)*.*

It is almost unnecessary to remind the reader, that in many places in this country during the late epidemic, the choleric fluid was described as similar to water in which meat had been washed, and that the wine-lee discharges which were observed in severe cases, are in all probability the extreme degree of this form. But even Aurelianus afterwards remarks this very sort of discharge under the character,—*aliquando etiam egestio ventris sanguinolenta.* The *subalbida desputa* bear so close a resemblance to the frothy gruelly fluids, that it will be recognized by all, when merely mentioned.

The other characters of this disease given by Cœlius Aurelianus are still more strongly and unequivocally specified. Thus we have the rapidity of pulse and respiration, coldness of the extremities, the dark livid colour of the countenance, *(vultus nigrore fuscatus)*, and shrinking of the features, *(vultus in maciem atque tenuitatem deducti,)* the epigastric constriction *(præcordiorum ad superiora raptus, cum dolore iliaco simili,)* and the cramps of the legs and arms, *(contractio vel conductio membrorum, cum nervorum tensione, ac surarum et brachiorum.*)*

No mention is here made of bile or bilious discharges, or affection of the liver; and, on the contrary, Aurelianus expressly says, that the stomach and intestines suffer most by this disease, and that with these the other parts of the system sympathise.

In the circumstance of rapidity also, the resemblance is equally accurate as in other respects; for it was mentioned by those whom he at that time names *ancients*, that it was a most acute and rapid disease, which never lasted till the second day.

The work of Cœlius Aurelianus, however valuable it may appear to us, was probably not very widely circulated. At all events, his description, which was partly derived from personal observation, and partly translated from the Greek of his model, Soranus, the Ephesian, appears to have failed to rectify the mistakes then prevalent as to the nature of the discharges. It is not wonderful that Aetius of Amida, whose Tetrabiblion was

indeed a compilation from all other authors, gives a short and unsatisfactory definition of the disease, in which he merely mentions bilious, fetid, and acid vomiting and alvine discharges, followed by thirst, sweat, interrupted pulse, and spasmodic contractions of the muscles of the hands and feet, but especially of the calves of the legs. In his therapeutic directions, however, it is manifest that he had in view a very formidable disease, in which, when the discharge was excessive, (*αμετρος*,) the pulse became very weak, the surface cold and moist, and the patient was tortured with hiccup, intense thirst, and spasms of the muscles. It is farther important to remark, that the copiousness of the discharge in one passage he ascribes to the operation of a poison irritating the stomach and bowels, and drawing thither the fluids from the whole body.[*]

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* Coelii Aureliani Siccensis de Morb. Acut. lib. iii. cap. xx.

In the short and rather desultory sketch given by Paul of Aegina no mention is made of bile or bilious matter; but the disease is designated as an extraordinary disturbance of the stomach, causing vomiting and purging; and in a passage in the second book on fainting (*λειποθυμια*), he mentions that symptom as the consequence of cholera and diarrhœa and other excessive evacuations.[†]

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In his subsequent detail of the causes of the disease, he enumerates a train of symptoms, which certainly make a nearer approach to those of the malignant cholera of the East, than to any other known disease. As the complaint proceeds, he states that the alvine discharge consists of a thin watery liquor, and is sometimes like washings of meat, *(aquati atque tenuis liquoris fit egestio, et aliquando similis loturæ carnis,)* and along with these a whitish frothy or flocculent matter, *(subalbida desputa)*.*

It is almost unnecessary to remind the reader, that in many places in this country during the late epidemic, the choleric fluid was described as similar to water in which meat had been washed, and that the wine-lee discharges which were observed in severe cases, are in all probability the extreme degree of this form. But even Aurelianus afterwards remarks this very sort of discharge under the character,—*aliquando etiam egestio ventris sanguinolenta.* The *subalbida desputa* bear so close a resemblance to the frothy gruelly fluids, that it will be recognized by all, when merely mentioned.

The other characters of this disease given by Cœlius Aurelianus are still more strongly and unequivocally specified. Thus we have the rapidity of pulse and respiration, coldness of the extremities, the dark livid colour of the countenance, *(vultus nigrore fuscatus)*, and shrinking of the features, *(vultus in maciem atque tenuitatem deducti,)* the epigastric constriction *(præcordiorum ad superiora raptus, cum dolore iliaco simili,)* and the cramps of the legs and arms, *(contractio vel conductio membrorum, cum nervorum tensione, ac surarum et brachiorum.*)*

No mention is here made of bile or bilious discharges, or affection of the liver; and, on the contrary, Aurelianus expressly says, that the stomach and intestines suffer most by this disease, and that with these the other parts of the system sympathise.

In the circumstance of rapidity also, the resemblance is equally accurate as in other respects; for it was mentioned by those whom he at that time names *ancients*, that it was a most acute and rapid disease, which never lasted till the second day.

The work of Cœlius Aurelianus, however valuable it may appear to us, was probably not very widely circulated. At all events, his description, which was partly derived from personal observation, and partly translated from the Greek of his model, Soranus, the Ephesian, appears to have failed to rectify the mistakes then prevalent as to the nature of the discharges. It is not wonderful that Aetius of Amida, whose Tetrabiblion was

indeed a compilation from all other authors, gives a short and unsatisfactory definition of the disease, in which he merely mentions bilious, fetid, and acid vomiting and alvine discharges, followed by thirst, sweat, interrupted pulse, and spasmodic contractions of the muscles of the hands and feet, but especially of the calves of the legs. In his therapeutic directions, however, it is manifest that he had in view a very formidable disease, in which, when the discharge was excessive, (*αμετρος*,) the pulse became very weak, the surface cold and moist, and the patient was tortured with hiccup, intense thirst, and spasms of the muscles. It is farther important to remark, that the copiousness of the discharge in one passage he ascribes to the operation of a poison irritating the stomach and bowels, and drawing thither the fluids from the whole body.[*]

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Whatever opinion be entertained on the justice of this etymology, it is impossible to deny that Alexander of Tralles gives in the passage here referred to a correct view of the source of the fluids discharged, and a view the justice of which has been con-

firmed by modern observation. It is further no inconsiderable proof of the accuracy of the observation of this physician, that he admits the formation of cholera from various causes; and with a view to treatment distinguishes three varieties; one from indigestible or improper food, which is not proper cholera, he adds; another from redundant bile, which is free from danger; and a third, from some peculiar disorder of the stomach, the one which he evidently regards as most violent and severe. In this variety of the distemper, he adds, if the strength fails, the extremities become cold, and spasms and collapse (συστολη) take place, it is proper to give wine with decoction of mint. For by its efficacy above all agents in rapidly recalling the sinking powers, he had known many unexpectedly rescued from death.[*] The term συστολη, which I have rendered collapse, signifies literally *contruction* or *shrinking;* and as the verb from which it is derived is occasionally used by the Greek authors to indicate the effect of any of the depressing passions, I think it evidently proves, that the context indicates the state of the former denominated collapse.

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The description of John the son of Zacharias, physician to the court of Andronicus Palaeologus, and commonly known under the name of *Actuarius*, though less specific than that of Aretæus and Cœlius Aurelianus, affords nevertheless information on the discharges and their effects sufficiently characteristic to claim attention. After speaking of the preternatural increase of fluids from the alimentary canal by turgescence, as he calls it, or excitement of the expulsive faculty, he adds the remark, that this also must not be overlooked, that occasionally the intestinal discharge passes into cholera, and gushes forth in some instances both upwards and downwards, in others downwards only. The dejections, then both appear watery-bilious (ὑδατοχολα), and are so denominated; and if they are very abundant, and not opposed by remedies, they produce weakness, faintness, *syncope* and coldness of the whole surface. He at the same time adds, that whitish milky discharges, void of consistence, (*quæ excernuntur subalbida, et lactea, nec cohaerantia*) indicate excessive feebleness of the digestive and assimilative functions, in consequence of the excessive chilling of the living frame; and immediately after distinguishes this discharge from those which are brown and yellow, and which arise from redundant bile.

These testimonials of the ancient physicians show that they were aware of the existence of a disease commencing with vomiting and purging, first of the contents of the stomach and bowels, and then of an immense quantity of serous or watery fluid, occasionally with whitish opaque fluid, and followed by cramps of the limbs, weakness and failure of the pulse, loss of voice, contraction, and more or less discoloration of the surface, cold sweats, cold extremities, hiccup, and death,—in short, all the symptoms of genuine cholera. The only difference is, that we do not hear of its occurrence in the epidemic shape. This, however, is foreign to the question; and it is sufficient that the existence of the disease in ancient times is irrefragably demonstrated.

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[*] Alexandri Tralliani, lib. vii. cap. xiv.

By what means has the knowledge of these facts been lost or overlooked, it may be asked? Did the disease cease to appear in the virulent shape described by Aretæus, Cœlius Aurelianus, Theodore Priscian and Actuarius; or were the facts recorded by these authors neglected amidst the general ignorance of the middle ages? The Europeans then received most of their medical information from the Arabian physicians; and the only mode in which this oversight can be explained is by supposing that these learned but fanciful persons had neglected to give a description of cholera as accurate as that of their Grecian preceptors. It is, however, a fact not less true than singular, that not even this excuse is left to the defenders of the new origin of cholera. The disease is described under the name of *choleric affection or passion* in the pages of Mesue, Serapion, Abubeker Al Rasi and Abu Ali Ebn Sina, with sufficient precision to establish its identity with the disease of modern times. I shall merely refer to the descriptions of two of these authors.

The description of Serapion, who flourished, according to Friend, about the 890th year of the Christian era, though prolix, and occasionally confused, presents, however, all the essential characters of the disease. He remarks its insidious mode of attack, its incipient mildness, and its sudden deterioration. He remarks the burning irritation of the stomach and bowels, the ejection first of food, and the contents of the alimentary canal, then, *sequuntur ea eversiones aquosæ, puræ, et cholericæ*, with restlessness, anxiety, and nausea. The person of the patient is then shrunk, and he voids fluid like water in which flesh has been washed, with a mawkish sour smell, the pulse becomes weak, the temples collapse (*submerguntur tempora,*) the nose shrinks, and becomes cold, the countenance loses its natural complexion, and assumes the image of death, (*permutatur pulchritudo faciei totius ad dispositionem mortis,*) the feet become cold, the patient is covered with cold sweat, then cramps attack the hands and feet, and, unless the physician is prompt and undismayed, death speedily ensues.*

Abu Ali Ebn Abdalla Ebn Sina, better known to Europeans under the corruption of Avicenna, gives in the 16th *Fen* of the third book of his Canon or Encyclopedia of Medicine, a full description of the phenomena and treatment of the *passio cholerica*, in which he remarks, like Serapion and others, its very mild commencement, and its rapid and speedy malignant aspect afterwards. The enumeration of symptoms is so clear and short that it may be added without impropriety in the words of the Latin translation.

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* Practica Joan. Serapion, dict Breviarium Tract. iii. cap. xix. Imp. Venetiis, 1497.

"Incipit ergo cum fluxu ventris cholerico, *deinde aquoso, puro, fœtido* ; deinde quandoque perducit ad fluxum ventris, qui est sicut *lotura carnis recentis*, habentem *odorem pinguedinis*, —et ad *curathium* ; deinde perducit ad mollificationem pulsûs, et spasmum, sudorem frigidum, et ad mortem."

Here we remark the occasional occurrence of the discharge like washings of meat, while the *odor pinguedinis* is evidently the peculiar mawkish faint smell emitted by choleric discharges ; while the other discharge to which it leads,—*curathius*, is a barbarous or Arabic term, corresponding to mucilage, and manifestly the same as the rice-water or gruelly evacuation. *Mollificatio*, I must add, is the term invariably used by the Arabian physicians to denote extreme weakness and failure of the pulse.

In another passage in the same *Fen*, in which he impresses on the physician the necessity of attending to the discharges, he imagines that chyle, or something similar to it, is evacuated, and admonishes him that either this or the mucilaginous evacuation is pregnant with great danger, because they enfeeble the system and extinguish the pulse.

"Dum enim perseverat exeundo chylus et aliquod homogeneum ei, et cibus, non conceditur ejus retentio omnino aliquo modo. In ipso enim est magnus timor. Et similiter quum illud quod egreditur est res *curathi* (mucilago) viscosa, aut cholerica, aut alia ex iis quæ debilitant corpus, et imprimunt in pulsu, et faciunt eum frequentem, læsum secundum æqualitatem, et descendentem ; et faciunt apparere in corpore sicut extenuationem ; et in mirach (abdomine) sicut spasmum." *

Though the language cannot here be recommended for its elegance, the essential circumstances are nevertheless specified with sufficient clearness and precision to show that Avicenna had in view the mortal disease of the East.

It is almost superfluous to refer to the European physicians of the Arabian school, who in general had too little learning or originality to do more than copy in the most servile manner the instructions of their preceptors. John of Gaddesden, the first English court physician in the reign of Edward II. and professor at Merton College, Oxford, in the early part of the fourteenth century, gives but a confused account of the dis-

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* Lib. iii. Fen. xvi. Tract ii. p. 817.

servers, and that this has given some ground to the assertion that, though ordinary cholera has been long known, the virulent form of the disease, with the sero-albuminous discharges, and collapsed state of the vascular system with which we have become of late so familiar, is entirely new. I trust that before the remarks in the present paper are concluded, I shall show that even this mode of explanation cannot be employed with propriety.

It may seem perhaps, on the ground now stated, superfluous to attach much importance to the descriptions of the ancient physicians. I must remark, however, that the writings of these authors, present unequivocal proofs that they were familiar with a disease which, in all its essential features, resembled accurately the exquisite cases of virulent or malignant cholera.

Aretæus, commonly named the Cappadocian, is the first writer whose authority I shall adduce on this point. This physician, whose age is uncertain, but who is on good evidence, believed to have flourished previous to the time of the Emperor Titus, and not later than that of Trajan or Adrian, describes under the name of cholera, a most acute disease, (οξυτατον κακον) in which the matter of the whole frame, is carried by a retrograde motion (παλινορσος φορη) into the œsophagus, stomach, and bowels; in which the vomited matters are watery, and ejected with great force, and the intestinal discharges, though feculent, are fluid and mucous; in which, as the disease proceeds, the muscles of the arms and legs are cramped, the fingers become incurvated (δακτυλοι καμπυλοι) the nails blue (ονυχες πελιδνοι) the extremities cold, and the whole body stiff (το ολον ριγωδεες,) and covered with sweat; in which urine is not secreted, because the fluids are diverted into the intestines (ὑπο της ες το εντερον των υγρων μετοχετευσιος) the voice is lost, and the pulse becomes very small and frequent, as in syncope; and in which, after continued ineffectual efforts to vomit and calls to stool without discharging any thing, death takes place by convulsion, suffocation and retching, (εμετω κενω.) *

It is singular, that while he specifies the watery vomiting, and the watery and mucous stools, Aretæus states, that yellow bile is discharged both ways in the established disease, and black bile while the extremities are cold and blue,—a statement into which he has been led, I conceive, by his desire not to depart too widely from the definition of Hippocrates and his followers. It is on the contrary remarkable, that before the fatal event, he states, that there are constant efforts to vomit without discharging anything, and calls to stool equally ineffectual, (προθυμιαι τεινεσμωδεες, ξηραι, αχυλοι) dry and without fluid. That in this disease no bile was discharged at this period, is manifest from a direction

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* ΑΡΕΤΑΙΟΥ ΚΑΠΠΑΔΟΚΟΥ περι Αιτιων και Σημειων Οξεων και Χρονιων Παθων Βιβλ. Δευτ. κεφ. ε περι χολερης. Lugd. Bat. 1735, fol.

which he afterwards in the treatment gives the physician, to continue his remedies till feculent matters are evacuated from the rectum, and bilious from the stomach, and the heat returns to the surface and extremities. His final therapeutic direction is very remarkable. "If, on the contrary, he concludes, everything is rejected by vomiting, if sweat flows incessantly, if the patient becomes cold and livid, (ψυχρος δε και πελιος,) and the pulse proceeds to extinction and total failure, it is good in such circumstances to make a decent retreat."* Can this assemblage and train of symptoms, I beg to ask, apply to any other disease than the virulent and exquisite cases of cholera which we have lately witnessed? Nothing can be more characteristic than the use of the terms πελιος and πελιδνος to designate the blue or leaden colour of choleric cases at the close of life. Both terms are derived from πελος *niger*, *fuscus*; and πελιδνος, as well as πελιος, is more particularly used to denote a leaden colour of the surface—the one certainly most common in the stage of collapse.

It appears from the testimony, both of Cœlius Aurelianus and Alexander of Tralles, that considerable difference of opinion was entertained by physicians previous to them, and also by their contemporaries, on the nature of the fluids evacuated in cholera. The dispute appears to have originated in an etymological controversy, in which those who derived the term from χολη the word for bile, maintained that this was the fluid evacuated, as if it were the *passio felliflua*; while another party, who could not overlook the fact that the discharges were not bilious, derived the name of the disease from the quantity of fluids evacuated.†

Asclepiades, for example, represented cholera to consist in a *discharge of fluid, rapid and sudden from the stomach and intestines, (humoris fluor celer ac parvi temporis, ventris atque intestinorum)*, originating from indigestion. In this definition others remarked, that the discharge of fluid constituted the general character of cholera, and that the short space of time was added, to distinguish it from the *fluxus cœliacus*, which is a chronic affection,—a better proof that Asclepiades held cholera to consist in a discharge of white or watery fluid. Aurelianus justly observed, that the introduction of the causes, either immediate or remote, in the definition was superfluous; and that while the admission of the atoms peculiar to the sect of the methodical physicians was gratuitous, that of antecedent circumstances is still more so, because, he adds, neither is the choleric disease the only result of indigestion, nor does indigestion alone cause that malady. He therefore concludes, that it is unnecessary to dispute about the etymology, and that cholera is a

copious and sudden discharge of fluid from the stomach and bowels, occurring spontaneously, and independent of indigestion.

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In his subsequent detail of the causes of the disease, he enumerates a train of symptoms, which certainly make a nearer approach to those of the malignant cholera of the East, than to any other known disease. As the complaint proceeds, he states that the alvine discharge consists of a thin watery liquor, and is sometimes like washings of meat, (*aquati atque tenuis liquoris fit egestio, et aliquando similis loturæ carnis,*) and along with these a whitish frothy or flocculent matter, (*subalbida desputa*).[*]

It is almost unnecessary to remind the reader, that in many places in this country during the late epidemic, the choleric fluid was described as similar to water in which meat had been washed, and that the wine-lee discharges which were observed in severe cases, are in all probability the extreme degree of this form. But even Aurelianus afterwards remarks this very sort of discharge under the character,—*aliquando etiam egestio ventris sanguinolenta.* The *subalbida desputa* bear so close a resemblance to the frothy gruelly fluids, that it will be recognized by all, when merely mentioned.

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By what means has the knowledge of these facts been lost or overlooked, it may be asked? Did the disease cease to appear in the virulent shape described by Aretæus, Cœlius Aurelianus, Theodore Priscian and Actuarius; or were the facts recorded by these authors neglected amidst the general ignorance of the middle ages? The Europeans then received most of their medical information from the Arabian physicians; and the only mode in which this oversight can be explained is by supposing that these learned but fanciful persons had neglected to give a description of cholera as accurate as that of their Grecian preceptors. It is, however, a fact not less true than singular, that not even this excuse is left to the defenders of the new origin of cholera. The disease is described under the name of *choleric affection or passion* in the pages of Mesue, Serapion, Abubeker Al Rasi and Abu Ali Ebn Sina, with sufficient precision to establish its identity with the disease of modern times. I shall merely refer to the descriptions of two of these authors.

The description of Serapion, who flourished, according to Friend, about the 890th year of the Christian era, though prolix, and occasionally confused, presents, however, all the essential characters of the disease. He remarks its insidious mode of attack, its incipient mildness, and its sudden deterioration. He remarks the burning irritation of the stomach and bowels, the ejection first of food, and the contents of the alimentary canal, then, *sequuntur ea eversiones aquosæ, puræ, et cholericæ,* with restlessness, anxiety, and nausea. The person of the patient is then shrunk, and he voids fluid like water in which flesh has been washed, with a mawkish sour smell, the pulse becomes weak, the temples collapse (*submerguntur tempora,*) the nose shrinks, and becomes cold, the countenance loses its natural complexion, and assumes the image of death, (*permutatur pulchritudo faciei totius ad dispositionem mortis,*) the feet become cold, the patient is covered with cold sweat, then cramps attack the hands and feet, and, unless the physician is prompt and undismayed, death speedily ensues.*

Abu Ali Ebn Abdalla Ebn Sina, better known to Europeans under the corruption of Avicenna, gives in the 16th *Fen* of the third book of his Canon or Encyclopedia of Medicine, a full deresolvuntur, et magis ac magis concitata subversione ventriculi et vomitu, ægri apparent facie Hippocratica insigni exsangues, et ad mortis fauces deducti."

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* Practica Joan. Serapion, dict Breviarium Tract. iii. cap. xix. Imp. Venetiis, 1497.

This author, in two different parts of his works, describes the disease with symptoms so characteristic and intense, as to resemble very closely the Indian variety of the disease. He represents the discharges from the stomach and bowels to consist of watery and ichorous fluids, so profuse and abundant, as to carry off the spirits, and exhaust irreparably the strength of the patient, who is then attacked with convulsion, rigidity, and spasms, loss of voice, disappearance of the pulse, coldness of the extremities and surface, anxiety, restlessness, intense thirst, and anguish, while the hippocratic countenance, and total loss of power, give him the image of death.*

In illustration of these principles he details two cases, which certainly cannot, unless in the circumstance of their recovering, be distinguished from the virulent cases of oriental cholera.

The first occurred in the person of an officer, the governor of a fort at Lisbon, who, after spending the night in the open air, enfeebled and sleepless, eat an immense quantity of unripe fruit with fried eggs, and drank afterwards very cold water. Scarcely had he gone to sleep when he was awakened with retching and griping pains in the hypogastric region, and vomited so alarmingly, and discharged such a prodigious quantity of watery fluid from the bowels, with a wavering obscure intermitting pulse, anxiety, fainting, and convulsions of the legs, that within two days he is said to have had 300 alvine discharges, and 600 vomitings; the countenance was pale and bloodless, the respiration was interrupted, the voice gone, and the pulse had almost disappeared.

This patient, however, by a farrago of stimulants and astringents, of which the most important were port wine, alum, and opium, recovered in the course of three days.

The second case specified by Zacutus, occurred in the person of an old woman of 70, of slender and emaciated figure, who, after a surfeit of melons during the dog-days, was immediately attacked by vomiting and purging so violent, that in three days during which she vomited 100 times mucous and fetid fluids, and discharged almost 300 times by the rectum ichorous fluids, and a liquid white phlegm, *(pituitam liquidam, albam,)* void of acrimony or insipid, she seemed almost lifeless. With unquenchable thirst, hiccup, obstinate sleeplessness, delirium, dry tongue, and loathing of all kinds of food, the pulse was intermitting, wavering, and sometimes entirely extinct; the voice was gone;

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* Zacuti Lusitani Praxis Historica, lib. v. vel ult. Num. vii. and De Praxi Med. Administ. lib. i. obs. xvi.

the extremities were cold; the limbs occasionally convulsed; the urine was suppressed; the heart had only a tremulous motion; and the patient was in a state of continued faintness, *(leipothymia.)*

By the use of astringent injections, however, stimulant drinks and soups, medlar syrup, and chalybeate milk, this case entirely recovered. *

From such cases as these, therefore, Zacutus recommends the physician not to despise this disorder, which, fatal to few, he adds, in Portugal and Amsterdam, yet, in the east, where it is denominated in the native language *Mordexi*, immediately destroys the majority of those attacked; and in Mauritania and Arabia he represents it to be equally mortal. To this disorder, indeed, he represents the Arabians to be particularly liable, by reason of their habitually eating a cold pudding or dumpling, *(fercula)* consisting of sliced bread and an oily substance named vernacularly *cuscus*; and as this mass is raw and scarcely baked, it is digested with great difficulty, and swelling the stomach is liable to induce cholera.†

It is almost superfluous to remark, that the use of *cooscoos* has been observed among many of the Moorish and Arab races by modern travellers.

Zacutus further mentions that a colic spread epidemically over all Europe in 1600, and destroyed the majority attacked within four days. Was this simple colic or cholera?

If it seem singular that these accounts, and particularly those of Abraham Zacutus, did not correct the oft-repeated erroneous statement, that the choleric discharges were bilious, it will appear perfectly extraordinary that any one could maintain this assertion in opposition to the accurate, specific, and satisfactory description given by Herman Vander Heyden, a Flemish physician, before the middle of the seventeenth century. This author, who was public physician of the town of Ghent, published in the year 1643, in a small treatise in 4to, a discourse or advice to the public on painful loosenesses, *Trousse-galant*, or *cholera morbus*, plague, and agues, in which he gives, with a good deal of the fanciful theory of the day, by far the best and most original description of cholera,—so original indeed, that he shows at once that his description was not copied from authors, but collected from observation. The value of this document, which has been utterly overlooked by all authors, is so great, that, with the exception of the old French in which it is composed, I shall give his description nearly in his own words.

" As the names of diseases, in order to avoid misapprehension, ought to agree with their definition, and yet authors, though the disease considered in this discourse has been by all antiquity denominated *cholera morbus*, have not wished to change its name;—and as, notwithstanding, I observe that different opinions and descriptions of it are given;—I must say first of all, that I do not believe this name to have been given it, because the great disorder and violence of the evacuation is caused by excess of acrimony, or the quantity of choleric or bilious fluid. For, although among other definitions, it is said to consist in an immoderate expulsion of choleric or bilious fluid, I cannot adopt this opinion, because neither do these yellow discharges appear as in bilious diarrhœa; but they are generally crude, and rather of a phlegmatic (serous) colour, and at last as white as pure milk *(à la fin si blanches que du clair laict;)* nor is it most frequently accompanied with fever, or any symptom indicating excess of heat or acrimony, excepting pains of the belly and thirst, which always are to be ascribed to great evacuations. I therefore am of opinion, that this disease deserves rather the names of *Trousse-galant* and *felon*, which signify pack up your last baggage; for it is a most dangerous, rapid, and felonious disorder; and I believe that the excessive discharge and violent agitation by this peccant fluid ought to be ascribed to its malignant quality."

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* Zacuti Lusitani, Obs. xvi. p. 44, De Praxi Med. Admin.

† Zacuti Lusitani Praxi Histor. lib. v. Num. vii.

Vander Heyden then involves himself in some little confusion, by reasoning about malignity, sympathies, and antipathies, and occult qualities, but at length recovers himself, and says that *Trousse-galant*, or *Cholera*, which he defines parenthetically to be an evacuation or rather expulsion immoderately great, by incessant vomiting and purging, is caused by nothing else but a malignant quality of the food and drink, the fluids and serosities, particularly the bile; and to distinguish it from diarrhœa, he adds the following remarks.

"The furious evacuation in *trousse-galant* is very dangerous, and carries off in a short time so much of the substance and strength of the body, and effects so much injury and change, that sometimes in less than seven hours, attendants will not treat a patient in it as master or relative, if they did not know him to be such, since they witness a genuine Hippocratic countenance, which signifies perfect extenuation and the image of death. This I can say I have seen among other cases in a patient of this description, whom, though I was called only to him five hours after the first attack of this felonious disease, I found overwhelmed with every symptom indicating an absolutely fatal prognostication, viz. without any pulse and speech; with the evacuations consisting of a liquor like clear milk, (*une liqueur semblable au clair laict*,) which indicated dissolution of nature to be there; the eyes so sunk in the orbits, that they could scarcely be seen; the arms and legs so retracted by convulsion, and so stiff, that no motion was observed, and so cold with the permanent moisture of a cold clammy sweat, that on seeing and touching the patient, he might be judged to be rather dead than alive. From this ominous state, however, he adds, against all expectation of convalescence, by means of a particular pill, consisting chiefly of opium, hyoscyamus, mummy, red coral, amber, saffron, and hartshorn, by the grace of God he perfectly recovered."

I must add, however, that if any person had seen the patient in the state now described, he would have at once, and without hesitation, have pronounced him to be in the stage of collapse of malignant Asiatic cholera. From the testimony of Vander Heyden, cases of cholera of the kind now described were at that time not uncommon in Ghent, and in many places near the Flemish Polders.*

The next person by whom the disease is mentioned under its oriental denomination is John Albert de Mandelsloe, a native of Mecklenburg, in Lower Saxony, who, by permission of the Duke of Holstein, travelled in the suite of an embassy sent to Persia by that prince, and afterwards travelled chiefly under the protection of the English government of the East Indies. Mandelsloe merely says, in speaking of the effect of the winds in blowing across the Balaghaut mountains and the shifting of the monsoons, that "the sudden change of the season, as well as constant variation of the winds, prove the occasion of many distempers, especially that called *Mordexin*, which kills without delay."† Mandelsloe travelled from Ispahan in 1638 to Surat, which he quitted on the 1st January 1639; and he arrived in London on the 28th December and in Gottorp on the 1st of May 1640.

The next authority by whom cholera, as a disease of hot climates, is mentioned, is William Le Poix, latinized *Piso*, who published at Amsterdam in 1648, a work on the physical, natural, medical, zoological, botanical, and toxicological, History of Brasil, distributed into five books. His account of the disease is short, desultory, and imperfect. That he describes, however, the genuine disease, is manifest from several of the leading symptoms which he enumerates, and in which, he says, the patients "cum subita quadam spirituum effusione ac leipothymia ex tetris et fuliginosis vaporibus orta; adeo ut, si ante viginti quatuor *horas* non evadunt, succumbant." This, he adds, may be anticipated, if the pulse becomes feeble, the respiration interrupted,—if the members become cold and sweat, while there is extreme burning of the internal parts round the heart, and convulsions.*

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* Discours et advis sur les flus de ventre douloureux, sur le Trousse Galant, dict Cholera Morbus, La Peste, &c. Composée par M. Hermann Vander Heyden, Medecin Pensionaire de la ville de Gand. A. Gand, 1643, 4to.

† The Voyages and Observations of John Albert de Mandelsloe, et apud Harris's Collection, Vol. i. p. 776. London, 1744. 2 vols. folio.

Piso says nothing of the native denomination of this disorder, an omission which is supplied by the next two authorities I shall mention.

The first of these is M. de Thevenot, who travelled through the greater part of the Indian peninsula, and even penetrated into several of the northern provinces, between January 1666 and February 1667, when he was on his return to France; but De Thevenot died at Miana, thirty leagues from Tabris, on the 8th November the same year, so that his Indian travels were published posthumously. In these he states, that the Portuguese apply the name *Mordechin* to four sorts of colic very frequent in India,—the first, simple colic with acute pain; the second, looseness with pain; the third, violent vomiting with pain; the fourth combining all three symptoms, viz. vomiting, looseness, and extreme pain; and the last, he adds, "I take to be the *Cholera Morbus*." Like all other authors, ancient and modern, he ascribes these attacks to indigestion; but mentions, that they cause pain so intense, as to kill the individual in twenty-four hours. He further remarks, that the Indian remedy for the disease is to apply to the heel of the patient a peg of iron, half as thick as the finger, red hot, so as to cauterise, and that this applied to both heels is very generally successful.†

The next author is M. Dellon, a physician, who, in 1668, went to the East Indies to gratify scientific curiosity apparently, but was obliged to quit Tellicherry in 1671, in consequence of incurring the suspicion of the Portuguese religious establishments. He therefore embarked at Goa in January 1676 for Europe, by the way of Brazil and Portugal, and finally arrived in France in August 1677. In his work, which was published at Paris in 1688, and at Amsterdam in 1699, he informs us, that the disease which the Orientals call *Mordechi*, though only an attack of indigestion,—is frequent in India in consequence of the stomach being enfeebled by heat and sweating, is nevertheless dangerous, and persons attacked often die in a few hours, if not speedily relieved. Like De Thevenot, he mentions the red hot iron as the most effectual remedy for those attacked by the *mordechi*; but states, that the method is to thrust the iron, which he describes as a skewer, through the hardest part of the heel till the patient screams with pain, and then removing the cautery, to give a few smart blows with a slipper. At first, he says, he ridiculed this whimsical remedy; but experience, he adds, is in support of its utility, and he states that he repeatedly found it successful.* Dellon was too credulous.

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* Gulielmi Pisonis De Indiæ Utriusque re Naturali et Medica, lib. ii. cap. xi.

† The Travels of M. de Thevenot, Third Part, containing the relations of Indoostan, the New Moguls, and of other people and countries of the Indies now made English. London, 1687.

The evidence adduced from the writings of Zacutus Lusitanus and Vander Heyden, regarding the serous, watery and milky character of the discharges in cholera, ought to be perfectly sufficient to determine the point as to the identity of the Asiatic and European forms of the disease, and to show, that the difference is one in degree only and not in kind. It is singular that this character had escaped the observation of Sydenham, who has in other respects given an account of cholera in general correct. It may demonstrate, however, the advantage of particular observations over general descriptions, to say, that, in compensation for this defect, Morton, whose habits of observing and describing disease are unrivalled in accuracy and fidelity, has recorded one of the most striking examples of intense virulent cholera, with blueness of the surface, serous and milky discharge from the intestinal tube, and all the symptoms of the most irrecoverable collapse that ever was seen on the banks of the Ganges; and all this in the immediate vicinity of the city of London. The case to which I allude is recorded by Morton as an example of ague assuming the choleric symptoms, and, in short, presenting the true choleric character.

It occurred in 1690, in the person of a meagre valetudinarian of 50, residing in Mile End, who, in consequence of getting wet in the rain, while on the Thames rather long, was, on returning home, suddenly attacked with intense cold shivering, followed by universal chill, during which the pulse could scarcely be felt; and then by vomiting, purging, extreme oppression at the region of the stomach, and sickness exactly similar to *Cholera.* An apothecary who was summoned, by covering him abundantly with bed-clothes, and administering cordial boluses and juleps, endeavoured during the whole night to revive the almost extinguished spark, and to subdue the other alarming symptoms, but unavailingly. The following morning, when Morton saw the patient, he found the face perfectly Hippocratic and shrunk, the whole body as cold as clay, and drenched in sweat, the skin of a black tinge in many places, and the strength almost exhausted by constant sickness, and the discharge of variously coloured bile by the mouth, and of a fetid whitish cream by the anus *(evacuatione cremoris fœtidi albescentis per anum.)* Every thing indicated approaching death;

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* Nouvelle Relation d'un Voyage fait aux Indes Orientales, &c. par M. Dellon, Docteur en Medecine. Amsterdam, 1699.

as the vital principle, or the animal spirits, were so depressed, as Morton imagined, by some poison, that they could not be expected to be again expanded. The use of cordials and stimulants produced slight alleviation; but the patient expired within twenty-four hours from the attack.*

Morton gives a similar case, which occurred in 1676, in the person of a boy of 10, who, after labouring for three weeks under a tertian ague, was suddenly attacked by constant sickness, vomiting, and restlessness, with unquenchable thirst, a very small pulse, and general cold sweat. Purging is not mentioned; but it might have been overlooked. The boy continued languid and cold, till the end of the third day, when he died with symptoms of irrecoverable *leipothymia.*

Cases very similar are given by Torti, and other physicians who have practised in aguish places, and with the choleric agues in tropical climates and the southern malarial regions of the temperate zone, must be held as good evidence to prove the adequacy of miasmatic or atmospherical agents in inducing cholera. It is, however, unnecessary after these to adduce further examples.

The course of my inquiry leads me to continue the chronological order; and in this I think it unnecessary to refer to the writings of Rouppe, who saw choleric attacks at the island of Curaçoa in 1760, or the work of Dr James Lind of Haslar Hospital, who, though he mentions the disease in 1768 under its proper oriental name of *Mordechin,* and distinguishes it as most rapidly fatal, gives no specific description.—I prefer proceeding at once to the distinct, full, and unequivocal description of M. Sonnerat, who, by order of the King of France, visited the East Indies and China in 1774, and spent seven years in studying the natural and civil history of these countries, and the manners of the native inhabitants.

This observer describes two forms of gastro-enteric discharges, incident, and often epidemically prevalent, in India; and both, like all authors, almost ancient and modern, he ascribes to indigestion.

The first of these is what he terms *acute flux,* and which prevailed a few years before the period of his visit extensively over the whole country, committed great ravages, and between Cheringam and Pondicherry carried off 60,000 persons. It arose from various causes. Some were attacked after sleeping during the night in the open air; others after eating cold rice with *Tair,* or curdled milk; but the majority were seized in consequence of eating after bathing or washing in cold water, which induced indigestion, he says, with universal spasm of the nervous system, followed by atony, and death, if speedy relief was not afforded. This form of disease, which was epidemic, took place while the winds blew from the north, in December, January, and February, and disappeared on their cessation. Its characters were a watery looseness, accompanied with frequent vomiting, extreme weakness, burning thirst, oppression of the breast, and suppression of the urine. Sometimes the patient suffered colicky pains ; often he lost recollection and voice, or became deaf ; and the pulse was small and contracted. The only specific was theriac, and what is named the bitter drug, which is a tincture of vegetable bitters made by arrack. The native physicians lost every patient. *

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* Pyretologia Exercit. I. *de Proteiformi Intermittentis Febris genio.* cap. ix. Londini, 1692.

Two years after a more formidable epidemic of the same kind appeared. It did not proceed from the same cause as the first, as it commenced in July and August. Its first indication was a watery diarrhœa taking place all at once, and which sometimes destroyed the patient in less than twenty-four hours. Those attacked evacuated at least thirty times in five or six hours, and were reduced to such a state of weakness that they could neither speak nor move ; and often the pulse disappeared entirely. The hands and ears were cold ; the countenance was elongated ; and a depression of the cavity of the orbits was the sign of death. Patients then felt neither pain of the belly, colic, nor griping ; but suffered a burning thirst. Some voided worms by stool, others by vomiting. This relentless pestilence is stated to have smitten all Castes equally, but especially those who live on animal substances, as the Parias. The native physicians were equally unsuccessful as before in treating this disease, which was renewed during the prevalence of the north winds.

It is remarkable that though Sonnerat gives this accurate delineation of two choleric epidemics, he does not apply to either the characteristic European or Indian name. Yet it is impossible to doubt that we have here all the marks of an epidemic of the most virulent malignant cholera. He further adds, in explanation of the causes of these disorders, that the Hindoos are liable to serous vomitings and purgings from suppressed perspiration, the want of proper food to maintain the equipoise of the circulation, and the want of suitable clothing ; and that in consequence they perish in great numbers.

It farther appears, that Sonnerat was unaware, that, in the delineation so faithfully given, he was describing the aggravated form of Indian cholera, since he states immediately after, that

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* Voyages aux Indes Orientales et à la Chine, &c. Par M. Sonnerat, Commissaire de Marine, Tome i. p. 113, 114, Paris, 1782.

the indigestions called there by a curious corruption, *Mort de Chien*, are frequent both among the Castes which live on animal matter, and among the Bramins, who, though they use neither meat nor fish, consume much butter with their rice, and are therefore cut off suddenly. Atmospherical vicissitudes he also states are frequent causes of the disease; and many are attacked after imprudently sleeping in the open air.

Sonnerat visited India in the year 1774. Consequently both the attacks now mentioned must have occurred previous to this date, probably about 1768; and it is impossible to doubt, that, from the numbers destroyed in a few weeks on both occasions, the disease assumed the epidemic form. From the statements of Mr Jameson prefixed to the Bengal Report, it appears that the disease again appeared in an epidemic shape in 1781, first among the native inhabitants in the Northern Circars, a narrow tract, extending between Ganjam and Chicacole, along the sea coast, and then among a body of 5000 men proceeding under the command of Colonel Pearce to join the force commanded by Sir Eyre Coote, attacking more than one half, and cutting down rather more than 700. At the same time it spread to Calcutta, and cut off great numbers of the native inhabitants.

Two years after, in April 1783, it is recorded that it appeared among a great concourse of natives assembled at Hurdwar, the spot at which the sacred stream of the Ganges issues from the mountains to water the champaign country; and where multitudes spend the night in the open air, either in the very bed of the river or on its banks, with little or imperfect shelter from the chilling dews of the Indian sky. The usual religious ceremonies had scarcely commenced among these devotees when the disease broke out among them, and in less than eight days destroyed at least 20,000 persons. It immediately disappeared, however, on the cessation of the festival.

Cholera appeared a second time in the Northern Circars in the spring of 1790, among a detachment of native troops marching under Colonel Cockerell for Seringapatam.

After these facts it is almost superfluous to refer to the authority of Girdleston, who was in India in 1780, and whose statements refer chiefly to that period, or to that of Curtis, who visited India from 1781 to 1783, and whose work, published in 1807, is in every one's hands, unless to say that both authors mention the prevalence and fatality of the disease under its Indo-Portuguese denomination; and that the latter gives a most accurate account of it, in which he both remarks the absence of bilious matter, and the profuse discharge of watery fluid from the intestinal tube. He nevertheless errs in supposing the native name to be French, and absurdly enough, on this view, explains it as the *death of a dog*.

From the foregoing sketch I conceive the following conclusions may be deduced.

1st, It appears that a disease distinguished by profuse and irresistible vomiting and purging of serous, sero-albuminous, or sero-sanguine fluids, and cramps of the legs and arms, followed rapidly by small or even imperceptible pulse, shrinking of the features, depression of the eyes and temples, more or less of a dingy, leaden or blue colour of the surface, with cold extremities, cold sweats, retention of urine, fainting and death, was known to Aretæus, Asclepiades, Soranus, Cœlius Aurelianus, Alexander of Tralles, and other ancient physicians.

2d, That a disease of the same character was known to several of the Arabian physicians.

3d, That, though the term *cholera* did not convey to the minds of most of the ancient physicians, the idea of bilious evacuations, the appellation has misled others of them, and especially several of the modern physicians, in making it be supposed that the characters of the disease were a discharge of bile from the stomach and intestinal tube.

4th, It appears, that, notwithstanding the influence of this mistake, several physicians of the latter half of the 16th and the early half of the 17th centuries, as Houillier, Le Poix, Sanchez, Sennert, and Abraham Zacutus *Lusitanus*, had sufficient originality and independence to disregard the definition derived from the current etymology, and to assert, according to their own observation, that the fluids discharged were watery or serous, and proceeded not from the liver, but from the vessels of the stomach and intestines; that Zacutus Lusitanus, Vander Heyden, and Morton, especially observed that the discharges were in severe cases albuminous or milky; and that all these authors had witnessed the assemblage of aggravated and exquisite symptoms denominated *collapse*.

5th, It appears that though Bontius describes the disease as more intense, more rapid in progress, and more certainly fatal in the East than in Europe, Van Lindshoten is the first voyager who mentions the disease under its Indian name, and Zacutus Lusitanus, to whom these peculiarities were known, is the first medical writer who in Europe mentions the distemper by its Indian or Indo-Portuguese appellation. It farther appears, that this term is afterwards currently used by Mandelsloe, De Thevenot, Dellon and others, to Girdlestone and Curtis; and that Sonnerat, in his wish to give it a French origin, had converted it into *Mort de Chien;* an error in which he has been followed by Curtis and some other English authors.

6th, I have now to observe that the term *Mordechim*, *Mordexim*, or *Mordechin*, which has been so differently written by European authors, and so strangely corrupted by Sonnerat and Curtis, is a word of Persian origin used by the Hindoos, and adopted from them by the Portuguese. It is not found in D'Herbelot; and though adopted in the Portuguese dictionaries, no etymological explanation of it has been given. I think it cannot be doubted that it consists of the two roots مردن *to die*, or *death*, or مرده *dead*, and خيم which, among its other significations, denotes the *bowels*, and consequently was used by the natives, as if to signify *bowel-death*. From the compound Indo-Persian term مردخيم the Portuguese must have adopted by the ear, the term *Mordexim*, pronounced as *x* always is in that language like the guttural *ch*. This derivation, which I conceive to be the just one, shows, that the name ought to be written *Mordechim*, or *Murdechim*, or, if the Portuguese form be adopted, *Murdexim*. It is superfluous to remark, how expressive the name is of the character of the malady.

7th, It is a historical fact established by the clearest evidence, that epidemics are mentioned by Sonnerat previous to 1774, and that subsequently, we have evidence of sudden outbreaks attacking large and multitudinous bodies of human beings, in 1780, 1781, and 1790. More early mention of epidemics might, no doubt, be found in the native records.

II. and III.—When cholera made its first appearance in this country, at Sunderland in September 1831, it was by many believed to have been imported by vessels from the Baltic; and several endeavours were made to trace the particular vessels by which the disease was introduced. This idea the two cases given by Dr Hazlewood and Mr Mordey, as occurring at Southwick and Pallion, on the 5th and 9th of August, were sufficient to render excessively doubtful, if not to overthrow entirely. A similar case, occurring in Newton, on the 6th January 1833, under the care of Mr Steele, is given in the work of Mr G. H. Bell. The most conclusive of all I conceive is the following, which took place in July in Newbigging, a small district or suburb of Musselburgh.

Robert Reid, aged 51, a potter, and exposed in consequence of working at the kiln, to great and sudden vicissitudes of heat and cold, was attacked, on Monday the 11th July 1831, with diarrhœa in the evening, for which he took some sulphur; and the diarrhœa, after continuing the greater part of Tuesday the 12th, stopped apparently spontaneously. On Wednesday he attended at Lasswade the funeral of a child, so that he must have been considerably better. On Thursday his duty led him to draw a kiln, as it is technically named; and in this operation he was much overheated. He was soon after attacked with sickness and vomiting, followed by cramps, and profuse loose discharges from the bowels, which continued the whole of the night. These discharges were gruelly and watery from the stomach, and like dirty soap water or dirty milk from the bowels; and they literally poured from him so as to pass through the bed beneath him, and wet the floor beneath the bed as if water had been spilt on it, and were entirely void of feculent smell. These symptoms were accompanied with painful cramps, first in the toes, then in the arms, then in the calves and thighs. On the morning of Friday the 15th a little after 7, he was visited by Dr Stephen, who found him with contracted features, eyes sunk in the orbits, the lips pale, the voice almost inaudible, the surface and extremities cold, the hands cold and incurvated, the skin clammy, the muscles of the thigh cramped in the form of hard rigid lumps, and the pulse not to be felt at the wrist. The thebaic pills relieved some of the sickness; and the application of warmth with the use of brandy, produced a temporary alleviation, with return of heat. But he continued much in the same state, with weak almost extinct voice, and coldness of the extremities and surface, except at the epigastrium, and died on Monday the 18th, about 9 in the morning.

Three remarkable circumstances deserve notice in this case. 1. It occurred in the person of a man who was living on the very place where six months after some of the fatal, and several severe, cases took place. 2. It began in the form of diarrhoea at first, and was mild, and underwent a temporary suspension, apparently independently of remedies. 3. It was believed to be at first a case of ordinary cholera, incident to the season; but Dr Stephen, when he afterwards saw and treated the cases of malignant epidemic cholera, admitted that the symptoms on the morning of Friday were in all respects similar to those of the epidemic distemper which in January and February 1832 committed such ravages in this neighbourhood.

No other similar case, however, had been observed to occur in this vicinity till the night of Monday the 16th January 1832. On Tuesday morning, 17th, Mr Sibbald was called to a Mrs Wilkie, aged 60, living in a close or lane, on the south-east bank of the Esk, nearly opposite the wooden bridge called Cairncross's Bounds. She had been attacked on Monday evening by the account, with purging and vomiting of watery fluid, continuing during the night; and on the following morning, when seen by Mr Sibbald, the countenance was dingy or leaden coloured, the eyes sunk, the voice whispering, the pulse scarcely to be felt, and the extremities cold and covered with clammy moisture. In this state she continued till Wednesday night, when she died. Some attempt was made to trace the case of this woman to the person of a soldier, who was said to have been in Haddington, where the disease was still lingering, and who, though never himself having had the disease, was stated, by visiting the house of Mrs Wilkie, to have thereby been capable of communicating its productive principle. Mr Sibbald, however, as well as Dr Stephen, assured me that no such person had been in the house of Mrs Wilkie, and that it was impossible to discover that she had been in communication with any person previously affected by cholera. In the subsequent course of the disease, the same locality, which is very low, damp, and not particularly cleanly, furnished many cases of the disease.

It was generally believed that no other case occurred till the morning of Thursday the 19th, when that of Charles Webster, in Robertson's Close, took place. This statement is in the main correct, and I shall advert to the case of Webster in due course. I must remark, however, that when in Musselburgh on the 22d January, I saw several persons labouring under various forms of gastro-enteric disorder, for instance, diarrhœa alone, vomiting and diarrhœa, &c., who, on strict interrogation, admitted that they had on Wednesday the 18th, been labouring under bowel complaint in various degrees of severity. This was the case especially with the girl Jess Kinghorn, living in a house close by the aqueduct that runs past the hair-cloth manufactory, and with several other persons who had been working at that establishment.

In the meanwhile, however, that is, before any other marked or impressive case had occurred in Musselburgh, the disease had appeared between the night of Wednesday the 18th, and the morning of Thursday the 19th January, at Coalpits, a small village or hamlet about a mile above Musselburgh, on the east or south bank of the Esk. This place consists of about 40 houses, arranged in two rectangular lines, one parallel to the bank, the other at right angles to the course of the river. The line along the bank consists of 12 cottages; that at right angles to it consists of 27; and a single house, a little larger than the rest, is placed at the opposite corner. All consist of one story or flat only, built on the ground; all have earthen or brick floors; and all are inhabited by colliers or persons connected with the pitmen.

The first case occurred in the person of Mrs Clarkson, aged about 36, who was attacked between two and three in the morning of Thursday 19th January with vomiting, purging, and cramps, followed by general coldness, and died the same evening between six and seven o'clock. This woman never was at Tranent or Haddington, nor any way to the east where the disease was prevailing, but had been on Monday 16th to Fisherrow, where the disease had not yet appeared. The cottage in which she lived is one of those in the line near the Esk.

The disease next appeared in the person of Jean Galloway, *alias* Mrs Currie, aged about 50, on Thursday 19th about twelve, in the usual way; and she died that evening at ten. Mrs Currie had rubbed the previous patient; but the interval between exposure and attack appears to be instantaneous. None of her family, consisting of her husband and three children, were attacked.

On the same day, Thursday 19th, Mrs Sneddon, æt. 49, who had been well on Wednesday, but afterwards acknowledged she had laboured under looseness without pain for three weeks, was attacked with sickness, vomiting, and more violent purging. This, which was the third case, recovered.

Mrs Moffat, æt. 60, was then attacked with the usual symptoms on Friday the 20th, at two P. M., and died on Saturday morning between four and five, after 14 hours illness. This woman had visited Mrs Clarkson on Monday; but the interval also appears to be too short for the influence of a contagious poison. None of the family, consisting of three sons and two daughters, were attacked.

The fifth case occurred in the person of George Clarkson, æt. 48, the husband of No. 1. He had been at the funeral of his wife on the afternoon of Saturday 21st between 3 and 4; he became sick, and vomited and purged copiously the same night; all Sunday he was in a state of collapse; and he died on Monday, twenty minutes after one in the morning. This family consisted of eight persons, one son by a former marriage, one son and daughter, twins at the breast, and a servant; yet of these eight, the father and mother only were attacked and cut off.

On the evening of the same day, the sixth case occurred in the person of Elizabeth Hine, a woman of 29, unmarried. Her first symptoms were cramps, speedily followed by vomiting and purging, and the usual symptoms of collapse. She lingered, however, till the 28th, when she died between seven and eight in the evening. This woman, who was said to be stout, healthy, and vigorous, had assisted Mrs Clarkson.

On the same day, Saturday 21st, James Sneddon, æt. 45, collier, who had been thoroughly exposed to moisture at the Prestongrange pit, and had been labouring under bowel complaints since Wednesday the 18th, was attacked with cold shivering and vomiting. The diarrhœa he states continued as white as curd and whey for two days. This appears, however, to have stopped almost spontaneously, for he took no medicine till Thursday 26th, and he recovered.

His daughter Elizabeth Sneddon, aged 16, who was attacked on Tuesday 24th at eight P. M. with sickness, vomiting, and profuse purging of clear water and slime, was less fortunate. These symptoms were speedily followed by pain of the back, general chillness, with great heat at the epigastric region, and a blue or leaden colour of the face, and blueness of the lips, and death at eight on Wednesday evening.

During the night of the same day, Tuesday 24th, Violet Inglis or Mrs Gray, a woman of 45, whose health had been deranged since the cessation of menstrual secretion, and who had suffered bowel complaint for several days before, was seized with vomiting and cramp, in addition to the bowel complaint, the discharges of which became then profuse and watery; and she died on the morning of the 25th, after twelve hours illness. This woman lived in the corner house nearest the Esk, which was clean and well aired, but with a brick floor. No other person of a family of eight was attacked.

Next day Jane Gray, a child of three, and niece to Mrs Gray, came with her mother to the funeral. The child was three hours in the house, in a room a good way apart from that in which the corpse was, and without communication with it. At the end of this time she became sick and vomited, was attacked in the course of the evening with looseness, and these symptoms having increased the following day, she died on the 27th, about eleven P. M. She was one of a family of ten, none of whom were attacked.

The last person attacked in this hamlet was Janet Wilson, æt. 35, mother of a family of six children, deserted some time before by her husband, and supported by parochial aid, who, on Sunday the 5th February, was seized with looseness, vomiting and cramps, speedily followed by chillness of the surface, and leaden coloured countenance, and death about ten A. M. on Monday the 6th.

Thus in this place of 40 houses, there were eleven cases and nine deaths. It was at first asserted that James Sneddon had brought the disease from Prestongrange pit, where it was alleged Tranent people were working; but Sneddon was not the first person attacked, and he assured me himself that no one at that pit had been affected by the disease, except himself. But even if they had, it is easy to see, that exposure to the humidity of the pit, which was one of the wettest in the neighbourhood,

was quite sufficient with the atmospheric constitution to produce the disease. All these cases, it may be observed, occurred, except the last, within a very short space of each other; and it is impossible to conceive the one communicated from the other.

I have already said that the disease had appeared on Monday the 16th at Musselburgh. On Wednesday the 18th January no new case had occurred; but early on Thursday 19th, the second decided case appeared in the person of Charles Webster, a stout healthy man of 38, living in Robertson's Close, Fisherrow, not far from the Old Bridge. This man, who had gone to bed on the night of Wednesday the 18th, quite well, with the intention of rising to dig a grave for the corpse of a relative, who had died not of cholera, but of old age, in a state of destitution, was awakened next morning at four with a bowel complaint, which was so severe and profuse that his wife attempted to dissuade him from going out to the burying ground. He persevered, nevertheless, was attacked with vomiting in the grave, returned without completing the task, with all the symptoms of the disease, and died the same evening in a state of complete collapse. Webster had no communication whatever with any person who had been at Tranent or Haddington. The locality in which he lived soon afterwards furnished seven fatal cases.

The same day, Thursday, 19th, Thomas Hilson, a young man of 17, a potter, residing in Ponton's Close, on the south side of the High Street, Musselburgh, was attacked about twelve with profuse diarrhœa, followed by vomiting, cramps, and the usual symptoms proceeding to collapse, in which state he died the following day. This was the third death; and by this time several other persons were taken ill. Thus Anne Weir, æt. 37, married, living on the south side of the High Street of Musselburgh, in Ponton's Land, was attacked on Wednesday night with pain in the bowels, and vomiting followed by diarrhœa, and was proceeding to collapse, when she was seen by Mr Moir. She was better on Saturday the 21st, and made a slow but pretty good recovery. In the same locality with Hilson, Mrs Jardine, aged 45, was attacked on Thursday, and died on Friday; and a day or two after, Ann Moody was attacked and died.

In Cairncross's Bounds, where the first case occurred, several more immediately followed. On Thursday afternoon, 19th, at five, Mrs Black was sufficiently well to look at the funeral of Mrs Wilkie; yet was attacked that night, and was lifeless before twenty-four hours had elapsed. A woman named Shivers, and another named Chestnut, were then attacked but recovered; and Chestnut's husband had symptoms.

In the meantime the disease was daily and hourly spreading.

On the 21st, when about twenty persons had already been cut off by it, fresh attacks were taking place every hour. Several of them indeed were mere diarrhœa or diarrhœas with slight vomiting, and perhaps would have proceeded to cholera only if neglected. But the number of persons complaining of more or less looseness of the bowels on this day was considerable. These persons were living in different parts of the town, some in Newbigging, some in Musselburgh, and one or two in Fisherrow; for in the latter place the disease had not yet appeared generally. About five or six persons, generally females, employed at the hair-cloth manufactory, had been attacked between Thursday and Saturday, chiefly with diarrhœa.

On Sunday, the 22d, the genuine choleric form of the disease appeared at Newbigging in the person of a man of 26, named Nisbett, who died next morning at three; the same day in Anne Renton, a woman of 50, who was immediately bled to the amount of eighteen ounces and recovered; and a few other cases of diarrhœa took place in the same neighbourhood. The woman attacked last had visited the man Nisbett; but she was taken ill immediately, so that the disease must have been in her person previous to the visit.

After this date the disease broke out in different parts of the town and its suburbs, all without communication with persons previously attacked; so that it was impossible to trace the course of the epidemic. It was manifestly, however, more partial to certain localities than to others. Thus it appeared on the 26th and 28th in Robertson's Close in Fisherrow, where it had already cut off Webster, and attacked and destroyed seven persons almost successively;—Mrs Beveridge, aged 45, two sons of 15 and 18, and a child of 2½; Mrs Scott, aged 45; George Jack, aged 45, and his son, a boy of 14. It was also very prevalent in the houses situate in the closes and narrow alleys communicating with the main street, and what is termed the *back* of Fisherrow. These alleys were remarkable for the accumulation of animal matter in a state of decomposition; all the houses have earthen floors, which are constantly wet, with every species of humidity. They were also imperfectly ventilated, and in several of them, in which there was either no window except a hole in the roof for the issue of the smoke, or the window had been shut up, the air was corrupted in the extreme. In these hovels the disease was frequent, rapid, and very fatal; and I am certain that I do not exaggerate when I say, that at least 150 of the fatal cases occurred in the situation now mentioned. This, indeed, is by far the most densely peopled part of Musselburgh; and when the disease appeared it seemed to find its most ready victims in this neighbourhood.

In this part of Fisherrow, if it were wished to demonstrate communication it could easily be done; for the inhabitants were in constant mutual intercourse. This, however, would not serve to explain the progress of the disorder among them; for on the one hand, the attacks were often simultaneous in one locality, or after intervals so short that it was impossible to imagine the disease to be communicated by any principle capable of such rapid maturation; and, on the other, in remote localities, where it was known that no intercourse had taken place with localities infected, the disease broke out spontaneously.

It is further remarkable, that while there were at Newbigging, which is a more elevated district, remote from the sea and the Esk, about 80 or 85 cases of diarrhœa, not above 28 of well-marked cholera and only 13 fatal cases, there were in the Fisherrow district about 180 cases of well-marked cholera. This fact may serve to illustrate the influence of low flat districts and the vicinity of masses of water, since Fisherrow may be regarded as standing on a dead level between the Esk on the east, and the sea on the north and west.

One professional gentleman who, however, had been liable to diarrhœa, and was of a sickly delicate constitution, was attacked, and cut off by the disease. Another gentleman had diarrhœa, which, however, subsided, under the use of the blue pill. None of the attendants who rubbed or nursed were taken ill except a woman, who was attacked with symptoms of continued fever.

Two persons employed in digging graves fell victims to the disease; but, to show the weight of this evidence, it must be stated, that one man was attacked while shaving, in consequence of the dead cart passing the window with two coffins in it.

The disease appeared in one instance in a private asylum for insane persons, but did not spread beyond the individual first attacked.

The disease began to attack smaller numbers about the 20th of February; and, after the cases had been comparatively fewer in number and milder in intensity, the last bad case of very decided collapse occurred on the 24th February, in the person of a man named William Jones, æt. 24, who was in perfect collapse on the 28th, and died that night.

The whole course of the epidemic was therefore completed in the space of about thirty-nine days; and during this time about 400 persons had been attacked with various symptoms of gastro-enteric irritation, and about 208 had been cut off in the state, in general, of collapse. This is a degree of rapidity of progress that accords very imperfectly with the characters of a contagious disorder; and the circumstance ought to be regarded by those who know the characters of the introduction, diffusion, and propagation of contagious distempers, as, along with others, decisive against the idea, that it was connected with any contagious principle.

It is further very remarkable, that during the whole of this period, though the intercourse between Musselburgh and Fisherrow and Edinburgh was by no means suspended, no case occurred in the latter city which could be traced to unequivocal communication with the former places.

The first distinct case which took place in Edinburgh appears to have been in the night between the 26th and 27th January, in the person of a man named Anderson, residing in the West Bow. This man had been at Musselburgh in a house where a fatal case had taken place. The same night the disease appeared in a girl who lived in a close off the West Bow, and who is said, on recovery, to have acknowledged, that she slept in the bed of a patient who had laboured under the disease at Prestonpans. On the 28th, a case which occurred about three miles from town in a young woman who had attended her mother in Musselburgh, was brought to Queensberry House, and terminated fatally. No case after this occurred till the 9th February, when two cases occurred in Ward 19, Canongate. A few days afterwards it appeared in a woman of 60, whose grandson was said to have spent some days in Musselburgh or Fisherrow. The boy had no symptom himself; but, some days after he returned to Edinburgh, the grandmother was attacked, and died. But suppose that it be admitted that these were examples of the importation of the disease from infected districts, this hypothesis will not account for the subsequent cases, none of which could be traced beyond the persons originally attacked. Thus in the Hardwell Close, a very filthy, moist, and densely peopled locality in the Pleasance, cases took place early in February, without any possibility of tracing them to communication with Musselburgh; and here they continued to recur during the subsequent course of the epidemic. John Ewing, aged 50, a gardener, residing in 108, George Street, but little employed, and earning only a scanty subsistence in a garden near the Union Dairy, and who had never been out of town farther than that, was attacked on the 24th February, and died that night. A man was attacked at this time, about the 28th February, with the disease from no other ostensible cause than working to overheating at some out-door work in the neighbourhood of the damp meadow below Salisbury Craigs; and to some similar cause, as I shall show, most of the subsequent cases could be traced. David Scott, aged 35, a milk-carrier, of intemperate habits, had diarrhœa all Tuesday, 13th March, and after drinking a large quantity of cold water while overheated and perspiring at 5 P. M. was almost immediately after attacked by vomiting and cramps, with profuse purging. He was admitted into hospital at 6, and died next morning at 4 A. M. It must not be denied that the disease proceeded very slowly and gradually; and while, in the early part of February, there were days on which no case occurred, about the middle and latter part of the month the cases were two daily,—on two days, the 17th and 22d, three,—and on the 15th, 19th, 25th, and 26th and 29th, only one,—and on the 28th none.

From this time to the 7th March no new case appears to have taken place,—at least none was reported; and though on the 7th one case appeared, it was only on the 11th that five took place, which were all in the Water of Leith, and in which the disease had appeared without the possibility of tracing its origin, and continued to spread until about forty-nine persons had been attacked, and twenty-seven had been destroyed, by the 24th of March. The rate of attacks in this village were afterwards on the 12th, four; 13th, three; 14th, thirteen; 15th, three; 16th, seven; 17th, three; 18th, two; 20th, two; 22d, two; and after this period, for a few days, it was abated; and the 23d, 24th, and 25th, afforded no case; the 26th one; the 27th three; and the 28th, two. After this it augmented at the rate of three daily; and eventually the disease continued till the 29th April, when it became extinct as an epidemic in this village. At the same time the disease was prevailing in other localities along the course of that stream,—for instance, at Canonmills and Bonnington,—but affecting smaller numbers, by reason of the thinner population. In the Water of Leith, however, the disease again appeared on the 4th of July, and continued to prevail, though in a very limited form, till the 15th. After which this village remained healthy till the end of August, when cases began to prevail, and continued to occur at intervals, both there and at Canonmills, till the middle of November.

It is impossible, in the space to which I must restrict these observations, to advert minutely to the progress and diffusion of the disease; and I must confine myself to the notice of such prominent facts, as may convey some idea of the mode in which the disease proceeded.

The disease presented in Edinburgh three epidemic periods of prevalence,—one which I date from February to the 14th of June, the second from the 16th of June to the 29th July, and the third from the 1st of August to the 1st of December.

At the commencement of the first period the disease advanced very slowly in the months of March and April in the city of Edinburgh, at the rate of from five to ten or fifteen new cases daily; one day affording four or five new cases, and the subsequent one seven, eight, or ten. On the 22d they rose to twelve, and increased by one each of the two subsequent days,—fell again to twelve on the 25th, rose to fifteen on the 26th, fell to ten on the 27th, to seven on the 28th, and all at once, rose to twenty-six on the 29th. This was the greatest number during the first period of the epidemic. A considerable number of these cases occurred in various closes in the West Bow, Grant's Close, and Grassmarket, Cowie's Close, Burt's Close, Plainstone Close, Foulis' Close. Others, however, occurred in very different localities, for instance in Richmond Place and South Richmond Street.

On the following day, they fell to twelve; on the 1st May, there were only five, and on the 2d, they rose to seventeen; after this they did not rise above seven, till the 9th, when they were fourteen; and after the 14th, they seldom rose above two cases daily. On the 26th of May, and on the 8th, 12th, 14th and 15th of June, there were no cases; and at this time the disease appeared to undergo a temporary abatement.

It was nevertheless remarkable that at Portobello, after it had been gone for some time, and the hospital there even had been shut, it appeared suddenly and unexpectedly about the 10th, when an old woman, in easy circumstances, and living in a well-aired comfortable house, became the first victim in the course of about 20 hours. In this case it was impossible to trace any communication of a satisfactory description; and the disease appeared to arise spontaneously, or in consequence of the prevalence of cold damp east wind. The same day a young man named Marshall, mentioned in my last communication, was attacked with a severe form of the disease, proceeding rapidly to collapse, from no other apparent cause than working on the beach without his jacket, and heating himself in the face of a cold sea breeze. It must not be omitted also, that the hovel in which he lived was built on the ground with a damp earthen floor; and, above all, that the sleeping apartments of the family were in direct communication with the filth of a cowhouse. It is nevertheless remarkable, that, though in both these cases the other members of the family continued in close and assiduous attendance, none of them ever had a symptom of the disease.

Many similar instances of attack and exemption occurred very much in the same way. Thus, Richard Mason, a man living in Drummond Street, was, after having overheated himself in dragging a small car to Portobello and back to Edinburgh, attacked on the evening of Monday 2d July at 10, and died next morning at nine. Thomas Pearson, aged 58, a labouring man, living in a foul and badly aired court in the Pleasance, had walked first to Cramond, thence to Leith, thence by the sea shore to Portobello, on Monday the 2d July, and sat down to rest himself on the way, and drank some cold water. He proceeded to Portobello, and thence to Edinburgh, where he was attacked that night with profuse vomiting and purging, rapidly followed by cramps, and then by the usual symptoms of collapse, and continued in this state till Wednesday night, when he expired. In this instance no communication whatever with any infected person could be traced.

Numberless similar examples occurred; and, in short, the instances in which the disease arose in this manner were so preponderating, that it was quite impossible to trace them to personal communication.

It undoubtedly happened that occasionally more than one member of a family were attacked. Thus a man named Murray, living in Wood's Court, West Nicolson Street, was attacked on Friday the 29th, and died on Saturday; and his wife was seized between the night of Tuesday 3d and Wednesday 4th July, and died the following day. In this case, however, both parties, it may be observed, were exposed to the same general causes of food, and mode of living; Mrs M. had been *five* days under diarrhœa; and none of the individuals who attended and nursed Mrs Murray to the last were affected by the disease.

After the temporary abatement at the middle of June, the disease began to spread more extensively again at the close of that month, and during July; and on the 26th and 30th of the former month nine cases, and on the 27th, thirteen occurred; on the 1st July, fourteen, on the 3d, sixteen, on the 4th, twenty, on the 6th, nineteen, on the 7th and 9th, eighteen, and on the 11th, fifteen; and after this date the cases began again to diminish to seven, four, six, and one daily, with the exception of the 18th and 23d, on each of which days thirteen cases occurred. On the 27th and 31st, there was only one, and on the 29th, no new case took place.

This subsidence, however, was of short duration; for though the disease did not, during the course of this month, break out very extensively or violently, there never was a day without from four to five new cases. The disease further observed the same fluctuations as in former months, that is, for one or two or even three days, there were only four, five, or six cases, but on the fourth day they might rise all at once to sixteen, or eighteen, or twenty. Thus, on the 16th, they rose to fourteen, having been only six the previous day; and though they were five and four on the 17th and 18th, respectively, there were twelve on the 19th, and nineteen on the 20th. This was the greatest number on any single day in the month of August.

The weather, I may add, was, during the greater part of this month, dry and steady, though chill at night. The barometer varied from 29° to 29¾°, and the greatest diurnal heat never exceeded 70°.

During September the daily numbers varied from four, which was the lowest, to twelve (5th), thirteen (16th and 25th), fourteen (1st and 18th), fifteen (15th), sixteen on the 28th, and 19th, which was the highest.

In the beginning of October, they assumed a very sudden increase, and after being twenty-two on the 1st, and twenty-three on the 2d, they rose all at once on the 3d to forty-four, and on 4th to forty-five, which was the greatest daily number observed during the whole course of the epidemic.

These cases came from all parts of the town; but the greatest number certainly came from such localities as, Castle Bank, Roxburgh's Close, Middle Meal-market Stairs, James's Street, Aird's Close, Fairley's Entry, Burt's Close, and especially Jamaica Street and the vicinity.

On the 5th, the numbers again fell to twenty-three, but rose on the 6th to thirty, were twenty-seven on the 7th, and fell to eighteen on the 8th, on the 9th to thirteen, but rose on the 10th to twenty-six, and were on the subsequent days successively nineteen, eighteen, thirteen, fifteen, and twenty-two, which was the number of the 15th; and after this they did not again rise above fourteen, which was the number of the 23d, but kept varying from four or five to ten or twelve.

In the month of November the disease began to undergo a manifest abatement in the extent of its prevalence; but the attacks continued as virulent and rapid as ever. The greatest daily number of cases in the course of this month was seven, which was the number of the 3d; and in general they varied from two to three daily, till the 10th, in which no new case was reported. Two cases, however, occurred on the 11th, two on the 12th and 14th, and one on the 13th; and the 15th, 16th, 17th, 18th, and 19th were again days of immunity. Two occurred on the 20th, 22d, and 24th; and the 21st and 23d were days of immunity. The 24th produced two cases, and the 25th, 26th, 29th, and 30th, each three. The first three days of December were days of total exemption; the 4th, 5th, 6th, 8th, and 9th, had one each; the 7th and 11th, each two, and the other days none. After this the disease ceased to exist in its epidemic form.

The total number of persons attacked was 1886.

The total number of deaths 1065.

The total recoveries 821.

Though, from the localities in which the disease prevailed, and the dates at which it was most prevalent, taken alone, not much precise information illustrative of its etiology can be obtained, I think these circumstances, combined with those of families and individuals attacked, afford elements of great importance.

It was, in the *first* place, remarkable, that, in a large proportion of cases, only one individual of a family was attacked; and not only the returns afford numerous examples of this, but the cases in the Castle-Hill Hospital might often be adduced to confirm this inference. Of 318 cases admitted, I find 291 examples of single attacks in the same family. The wife was occasionally attacked while the husband escaped; and conversely, the husband, if a drunken, irregular, or enfeebled and unhealthy person, was attacked and destroyed, and the wife escaped, and without one of the children being attacked; and, on the other hand, while a son or a daughter was attacked and cut off, not one of the family showed the smallest symptom of the disease. This shall be illustrated more fully afterwards.

In the *second* place, when two or more persons of the same family were attacked, it was in general simultaneously, or within so short an interval that it was physiologically impossible that the one should have communicated the disease to the other. The following examples will illustrate the nature of this inference.

Christian Fairbairn, a woman of 55, residing at Canonmills, was attacked on the 27th March at four in the morning, and died the same day at half-past three in the afternoon in the Castle-Hill Hospital. Her brother, who lived in the same house, locked his door that evening, and forthwith drank sixteen ounces of whisky. When the door was broken open on the morning of the 28th, this man was found in a state of complete collapse. He was admitted into the hospital at noon, and died at a quarter past one.

Charles Dickie, a boy of 5, was attacked at three P. M. of the 28th April, and died at four P. M. on the 29th. His mother, Catherine Dickie, aged 40, was attacked at four of the morning of the 29th, but recovered. A girl of 14, named Mary Dickie, was attacked at the same lodgings at three P. M. of the 28th; and a boy named Nathaniel Dickie, sent from the Police Office, had been attacked at two P. M. with choleric purging.

Isabella Johnson, 30, Brown's Court, Water of Leith, drank some sour beer on the night of March 12th, and was immediately after attacked by the disease, and died. Her daughter was attacked on the 14th.

George Cruickshanks and his wife, residing in Gosford's Close, were both attacked on the morning of the 5th July, the latter first apparently from their own testimony, but not above two hours before the husband. A man named Macculloch, living in Brown's Close, High Street, went to bed apparently, on the night of Tuesday, 17th July, with little complaint, but was found stiff and dead in the morning by his family. The body was inspected, and presented the usual appearances of choleric subjects. One of the sons was attacked the same morning with diarrhœa, which became so profuse in the course of the day that next morning, 19th, when he was vomiting, he came immediately to the hospital, and recovered. Eliza Martin, aged 25, Post-Office Close, was attacked with cholera on the night of the 27th September; and her mother the day after presented all the usual symptoms. Margaret Sutherland, aged 11, residing in Libberton's Wynd, was attacked on the 9th October; and in the course of the same day her mother was attacked. The former recovered; the latter died.

Now it is a common character of the whole of these cases, that though they took place in individuals belonging to the same family, living under the same roof, and in constant mutual communication, yet in each the interval between the attack of the first and that of the second was too short to warrant the conclusion, that the morbific principle of the latter was derived from the former. It is impossible, according to the rules of philosophical reasoning, and the known laws of physiology, to imagine that the human body is capable of communicating a morbific poisonous principle before it has manifest symptoms of disorder. It is difficult to conceive that the human body, even at the very commencement of a train of morbid action, can have elaborated any new principle capable of reproducing the same action; and it is most natural to think that the morbid process must be fully established, before it can give birth to the material agent, which, according to the hypothesis of contagious principles, is supposed to communicate the disease. In the short space of two hours, six, eight, or even twelve hours, it is impossible to believe that a poison can be generated in the human body, emitted from it, and communicated to the frame of a healthy person, so as to produce all the morbid phenomena, which had only commenced a few hours before in the system of the individual who is supposed to have communicated the poisonous principle. All this, however, we must admit, according to the hypothesis of contagious propagation in these cases now referred to, and many similar ones. We must believe, for example, that the man Fairbairn, who was taken ill about seven or eight hours after his sister, and had been removed from their house, had already in the short space of one or two hours been infected by her. We must believe that Mrs Cruickshanks had, after two hours illness, infected her husband; and that the man Macculloch had infected his son before five in the morning of Wednesday the 17th, since the young man had gone out at six, and did not return till he found himself unwell.

These facts and arguments, which require no further commentary, I submit to the consideration of those who are acquainted with the laws by which the propagation of contagious diseases is regulated. If it be not an inevitable conclusion, I think it is by far the most probable one, that these cases depended on the operation of the same general cause, whatever that may be.

On the other hand, when more than one of a family were attacked, it sometimes happened, that a space of four, five, or six weeks intervened, so as to render it impossible to refer the second attack to infection from the first. Thus James Barr, a sickly boy of 10, living at Castle Bank, was attacked on the 7th July, and died on the 11th. Every other member of this family remained free from the disease till the 29th September,—a space of nearly twelve weeks, when a younger brother, aged 7, was, after eating some raw fruit and vegetables, attacked with the usual symptoms, but recovered.

Thirdly, In other instances, where several members of the same family were attacked, either simultaneously or successively, the occurrence of the disease could be traced to indigence, penury, and more or less destitution. This was remarkably illustrated in the case of a family named Denham, residing in Stockbridge. Adam Denham, a boy of 11, was attacked on the 27th October, and died the next day; William, a younger brother of 8, was attacked on the 28th, and after showing symptoms of amendment, expired at length on the 3d November; and Mary Denham, their sister, a girl of 13, was attacked on the 29th, and with great difficulty recovered. It was afterwards ascertained that this family, whose appearance was much above that of the usual rank of our hospital cases, had been for weeks in great penury and distress, which produced an effect so much more striking on their health, in consequence of their anxiety to conceal it; and it was only when the first boy was in the agonies of death that they consented to come to the quarantine establishment. As the three cases followed each other with such rapidity, it seems more natural to believe that they all proceeded from the same general cause, than that the one derived the disease from the other.

These facts I think of more moment in estimating the influence of contagion, than those which are derived from the disease extending to attendants and others. The latter, of which we had numerous and forcible examples, are easily explained away by the doctrine of susceptibility or insusceptibility. The former show that what is named efficient propagation, or the formation of a disease in the frame of a person previously healthy, who has been exposed to another after a given time, cannot have place, unless there is both time for exposure and time for maturation of the alleged poisonous principle.

It is nevertheless not unnecessary to remark, that in no instance did the disease appear to be communicated to any of the attendants in the Castle-Hill Hospital; and in no instance was any one of them affected by the disease. One woman, who had been a nurse in the cholera hospital in Leith, and who was residing at Brown's Court, Leith Walk, was attacked on the 9th April, and immediately brought to the hospital, where she died on the 11th. One of our nurses, who was dismissed for drunkenness, went to the Drummond Street Hospital, where she was soon attacked, and cut off by the disease. One woman also, who was enfeebled, and had for years a bad leg, and was acting as nurse in the latter institution, was cut off by a rapid attack of cholera. But in all these cases, it may justly be presumed that these persons would have been attacked, whether they had been exposed to the disease or not. Wherever drunkenness, late hours, disease or infirmity, or much fatigue were in operation, they invariably rendered the subjects of them liable to cholera.

I will not, however, deny, that some cases took place which certainly had the appearance of communication from the sick to the sound; and, as I have no wish to suppress such examples, I shall give a few of them.

A man named Nimmo, who was in destitute circumstances, resident in Gibb's Entry, was attacked on the 13th June, and died the same day. On the 18th, his daughter and another woman, who was not resident there, but only a visitor, were attacked.

Miss H. aged 45, resident in George Street, was attacked at 5 A. M., 7th July, and died at half-past eleven the same night. Her father had diarrhœa on the 8th, yet on the 10th was able to walk in the Queen's Street Gardens, from which, however, he came home with loss of voice, and died the same evening. The woman who came two days after to wash the clothes in the house was immediately attacked.

A lady, rather past the middle period of life, residing for the time in George Square, and liable to habitual diarrhœa, was, after one of her usual attacks, on Friday 17th September, seized in the morning of the 18th with all the usual symptoms of violent cholera, which proceeded to collapse, and terminated fatally on the morning of the 19th. No other person of the same family was attacked; but the woman who acted as nurse, and who had carried off the shift of the deceased with the pious intention of communicating the disease to her husband, was herself attacked by the disease on the 22d, and died in Drummond Street Hospital. I do not believe, however, that this woman was longer or more freely exposed to the emanation from the patient than I was myself or the servant of the house; and I have every reason to believe that the mere fatigue, the night watching, and the consequent stimulation by spirits, to which she absurdly conceived herself entitled, were sufficient to induce the disease at such a period.

Mr Taylor also informed me, that Mrs Lockhart, aged 42, was attacked on the 9th of August, and died on the morning of the 10th, Friday. Mrs Forrest, aged 28, a stout healthy woman, and her mother, Mrs Smith, attended her for two nights. On the 10th, Mrs Smith had symptoms, but recovered. On the 11th, Mrs Forrest had a bowel complaint, which went on the whole day, Saturday; she applied for Mr Taylor's assistance, at three on Sunday the 12th, and she died that night. Mr Lockhart had the disease on Sunday, the 12th. These cases, however, may be equally referred to the influence of the locality in which Mrs Smith and Mrs Forrest had spent two nights.

Mrs Borthwick, aged 35, on the 7th August, washed the clothes of a child who had died of cholera on the 4th. She was immediately after leaving washing attacked about eight that evening by the usual symptoms, and died on the morning of the 9th. This woman was very apprehensive, but did not know that the clothes she was washing were those of a choleric case. Her husband was attacked on the 15th, and died on the 17th.

To these cases, as examples of transmission of the distemper from one individual to another, I do not myself attach much importance; because I can easily see that if such a distemper can attack one individual spontaneously, or from the operation of atmospherical causes, or in consequence of gross errors of diet, nothing can prevent it from attacking others in the same manner. In short, when the disease was observed during the whole course of the epidemic, to be springing up every other day in situations the most different, and among persons who had no possible intercourse with the sick, I cannot perceive by what means it can be regarded as contagious in its origin, or that the assumption of contagion would account for its propagation. On the night of the 2d November, two cases took place in the same ward in the Royal Infirmary, in persons who had not been by any means exposed to the disease; and next day a third followed. The same night, the disease attacked a man in the Calton Jail. It was afterwards ascertained that the patients thus attacked, who were women in bad general health, had been eating raw fruit the previous night.

Had the disease been in any degree or mode contagious, it is difficult to understand by what means the medical and other attendants escaped. Mr Rae, the house-surgeon, and Mr Ferris, the apothecary, were up alternate nights during all those periods of the epidemic in which cases were numerous or severe; and the day-duty of these gentlemen was so oppressive, that more than once I found them asleep, from downright fatigue, during the day. I in general spent from seven to eight hours daily at the hospital. Beside the regular hours of visit, at ten and three, I was often there at seven in the morning, and very often between nine and eleven at night, so that if free exposure be requisite to communicate the disorder, that was not wanting. I do not think I could have done the same with impunity in a Fever Hospital.

In the exposure of professional persons, however, especially if persuaded of the non-contagious character of the disease, there is nothing wonderful. Our managers manifested in the same way a most perfect disregard to the alleged contagious character of the disease. Not only did the Lord President visit the hospital frequently, and examine patients; but our ordinary managers, Mr George Forbes and Mr Cowan, made daily visits, at which they spent a considerable time, in seeing the most hopeless cases, and often in direct communication with them. The former gentleman, indeed, during the worst period of the epidemic, visited the wards twice daily, and, by his assiduous attentions, contributed very much to the efficiency of the hospital establishment.

In short, I think, that, from the foregoing facts and arguments, it may be justly concluded, that the disease may attack any person who has been exposed to cold or humidity, either while overheated, or while enfeebled by intoxication, by disorder of the alimentary canal, or by any cause which impairs the energy of the circulation of the cutaneous and mucous system. I think it also clearly results from the facts observed during this epidemic, that though more general, more sudden, and more virulent, in certain low and humid or filthy localities, it often depends chiefly on atmospherical causes, since like influenza it attacks at once large bodies of human beings, who are situate at very distant and remote parts of a community, and parts also widely differing in physical and local peculiarities.

If it be asked how we are to explain the comprehensive and epidemic prevalence of the disease, I willingly acknowledge my inability, otherwise than by referring it to atmospherical causes. From this, however, it does not result that we are to assume the presence of a contagious principle. The first step in the investigation of causes is to divest the subject of every assumption and every principle not susceptible of strict demonstration, and,

by excluding every inference of partial application, to confine the inquiry within the narrowest possible limits.

I have further to observe, that, connected with the habitudes and modes of living of the individuals, there are other circumstances which operate very powerfully as predisposing and exciting causes. The influence of some of these may be understood from the account of the morbid appearances found in the bodies of those cut off by the disease, the general tendency of which is to show that morbid states of certain organs, and correspondent dynamic disorder, constitute powerful predispositions to choleric attacks. With the view of rendering the influence of age, sex, and habits more distinct and obvious, I have now to subjoin the following statements.

The proportion of females attacked by cholera was much larger than of males. It is unfortunate that the sexes and ages are not always specified in the general reports, so that we are precluded from giving exact results from the whole epidemic. I shall, however, give the results obtained by the admissions into the Castle-Hill Hospital; and I think they were kept with such care that just reliance may be placed on them.

The total number of females attacked was 199. Of these *forty-one* either were, or stated themselves to be, married; *thirty-eight* were in the avowed character of public women; *eight* were in the condition of those who had been public women; *two* were of loose characters, though not avowedly public; *five* were in circumstances of extreme indigence; and all the residue were either unmarried, widows, or persons of whom no satisfactory statement was given. Of the whole 199, *forty-one* were habitually intemperate and drunkards; and this class generally included the whole of the public females, who, indeed, were in general the most miserable and depraved-looking wretches that could be seen. Of these, ten at least were sent from the Police Office, or picked up in the streets. From the latter class, combined with that of widows and indigent women in general, the mortality chiefly resulted.

Of married women attacked after their husbands, besides the instance of Mrs Murray already mentioned, I can find only three unequivocal examples, which occurred in Mrs Macpherson, Mrs Weir, and Mrs Furlough.

The entire number of men attacked was 118. Of these *twenty-one* were habitually intemperate and irregular; *eight* addicted to the excessive use of ardent spirits; and *three* had been drunk for several days previous to the attack. Of other persons, of whose previous habits no information could be obtained, six were sent from the Police Office, and two were picked up in the street. There is no reason to believe that those circumstances indicate the sobriety of these persons.

It was not an object of particular inquiry to ascertain whether the male patients were married or had relatives. But we have at least twenty-three instances of married men whose wives or children were not affected by the disease. The wives of Thomas Phillip, Robert Spiers, Andrew Butler, Matthew Girvan, John Gillies, Kenneth Forbes, and Alexander Blackburn; the daughters of Alexander Haigg, and Fergus Gunn, the sister of William Scott, the elder sister of the three Denhams, and the brother of Alexander Gordon, of which cases all except three were fatal, attended their respective relatives assiduously throughout the course of the disease, yet never presented a single symptom.

With the view of demonstrating the connection between age and the liability to the attacks of epidemic cholera, I may subjoin the following results.

Of 199 females the numbers attacked and destroyed, according to the ages, were:—

Ages.	Attacks.	Deaths.
		1 of 10 months.
From 1 to 10	9	3
10 to 20	23	4
20 to 30	47	17
30 to 35	21	15
35 to 40	27	15
40 to 50	39	28
50 to 60	19	15
60 to 70	7	6
70 to 80	6	3
not marked	1	1
	199	

Of 119 males attacked and destroyed by the disease, the ages were the following:

Ages.	Attacks.	Deaths.
		1 of 6 months.
From 1 to 10	14	9
10 to 20	13	8
20 to 30	14	8
30 to 35	11	9
35 to 40	16	10
40 to 50	18	9
50 to 60	19	14
60 to 70	8	3
70 to 80	5	5
not marked	1	1
	119	

From these tables it would result that the greatest numbers attacked were among the women between the ages of 20 and 40; that the chance of attack is as great between 20 and 30 as between 30 and 40; that the liability between 50 and 60 is nearly equal to that between 10 and 20; and that the liability is diminished below 10 and above 60.

Among males, in like manner, the greatest numbers are attacked between 40 and 60; and the numerical liability is nearly equal between 35 and 40, 40 and 50, and 50 and 60.

The mortality among the females was greatest between 30 and 40, less between 40 and 50, and nearly the same between 10 and 20 as between 50 and 60.

The mortality among males was most remarkable between 30 and 40 and 40 and 50; next between 50 and 60, then between 10 and 20.

IV. A single word may dispose of the subject of infection from the dead body. The number of bodies examined at the Castle-Hill Hospital was 54, of which 26 were inspected during the period when I had charge. In no case was any one either of those present or those occupied affected by the smallest symptom of the disease. We often commenced the dissections early in the morning, when it is commonly believed the body is peculiarly susceptible of infection; and the dissections occupied in general several hours daily. If complete exposure, therefore, were required, this could not fail to constitute it. Results equally conclusive were obtained at the other hospitals at which subjects were dissected with the same immunity. In short, this fancy of the dead subject infecting, which is physiologically impossible, and in some degree absurd, may be said to be proved experimentally to be quite unfounded. It is, nevertheless important to remark, that the proof or the refutation of the infection of the dead subject has nothing to do with the question of the infection of the living body; and attacks, even if occurring in this mode, prove nothing as to the contagious quality of the disease.

ART. IX.—*Observations on the Chemical and Physiological properties of the Empyreumatic Oils of Foxglove, Henbane, and Tobacco.* By JOHN DAVIE MORRIES, M. D. Member of the Medico-Chirurgical Society of Edinburgh, &c.

IN the course of some experiments, undertaken for the purpose of determining the nature of the active principles of *Digi-*

talis purpurea and *Hyoscyamus niger*, I was led to anticipate a similarity between the empyreumatic oils of these plants, and that of the *Nicotiana Tabacum*, so well known for its poisonous properties.

The empyreumatic oil of *Digitalis* is procured thus :—The powder of the dried leaves is to be introduced into a glass retort, to which a tubulated receiver is connected by means of an adopter; a second receiver, containing alcohol or ether, is attached to the first by a bent tube. Heat is to be applied to the retort, by means of a sand bath, which can be raised to a red heat if requisite. The first product of the distillation is an aqueous fluid of a light yellow colour and virose smell; as the heat increases, the oil begins to be formed, it is at first yellow, but becomes gradually darker. Towards the end of the process, a considerable quantity of carbonate of ammonia is formed, and collects in a cool part of the apparatus. During the whole course of the operation, a dense, pungent smoke, consisting of the oil in the form of vapour, is evolved, the greater portion of which is absorbed by the alcohol or ether in the receiver. This is of some moment, as the fumes, even when much diluted, and inhaled for but a short time, cause *vertigo*, *nausea*, and headach. The empyreumatic oil possesses the following characters; it is semisolid at 60° F., and melts at about 120°; of a dark brown, by reflected, and of a reddish colour by transmitted, light; of a pungent, biting, disagreeable taste; causing an increased secretion of saliva. Its odour is nauseous, resembling that of a tobacco-pipe which has been long in use; when shaken with water, it imparts to it the peculiar taste and smell, and renders it turbid. When heated with dilute acids, a portion is dissolved, and a solution, of a reddish brown colour, and of the characteristic odour and taste, results. Alkalies, when aided by heat, readily act upon it, throwing down a dirty white precipitate, which, on exposure to the air, becomes brown and resinous looking. In this state, it is soluble in acids and in alcohol, and is precipitated from its solutions in the former, on the addition of an alkali. Boiling alcohol and ether dissolve the oil with great facility, and form transparent solutions of deep brown colour; on cooling, a flocculent precipitate falls; when this is examined under the microscope, it is found to consist of two substances, one crystalline, the other globular. If the solutions be allowed to evaporate spontaneously, the crystals may be distinguished by the naked eye, and the globules are quite distinct; that portion, which imparts the colour to the solutions, gradually thickens and becomes of the consistence of extract. Strong nitric acid converts the oil into a substance bearing some resemblance to artificial musk, both in appearance and odour. The watery fluid which comes over with the oil is strongly alkaline, and effervesces with acids, from the quantity of carbonate of ammonia contained in it. Its colour undergoes several curious changes; but I have not yet investigated this part of the subject.*

When a solution, prepared by agitating the oil with dilute acetic acid slightly warmed, is neutralized with potass and distilled, an opaque white fluid passes over; it is extremely acrid, and when applied to the tongue causes a copious flow of saliva; it is alkaline, and when neutralized by acetic acid, and evaporated at a heat not exceeding 140° F., small acicular crystals, of an intensely acrid taste are formed.† When an alkali is added to a transparent solution of these crystals, a cloudiness is produced, and after standing for some time, a precipitate is found adhering to the glass; this is soluble in alcohol, ether, and the acids. When muriatic acid is added to the distilled liquid, the milkiness is immediately destroyed, and the solution becomes of a transparent red.

The undermentioned oils are procured by the same method as has been already described.

2. *Hyoscyamus niger.* There is hardly any perceptible difference between the oil of this, and that of the preceding plant. Their chemical properties are exactly similar.

3. *Datura Stramonium.* The smell of the oil of *Stramonium* is less unpleasant than either of the foregoing; it resembles tar, and the aqueous fluid which distills along with it is acid. This arises from the woody part of the plant having been employed. The oil itself, does not differ in its physical or chemical properties from the above mentioned.

4. *Nicotiana Tabacum.* The oil of tobacco is rather less solid than that of digitalis, but otherwise the resemblance between them is very striking, and I should think it almost impossible to distinguish them from each other, either by smell or taste. The liquid obtained from the acid infusion of the oil, after its neutralization with potass, by distillation, is more acrid than that procured from *digitalis* in the same manner. Its other properties are the same.

5. *Conium maculatum.* The watery fluid which passes over with the oil possesses, in a still more remarkable degree than that of the *digitalis*, the property of changing colour. When sulphuric acid is added in sufficient quantity to neutralize exactly the carbonate of ammonia contained in it, the solution

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* On turning up the article "Distillation Sèche," in Berzelius' Chemistry, I found that Reichenbach had described similar substances as existing in empyreumatic vegetable oils; the crystals correspond to his *Paraffine*, the globules to *Eupion*, and the dark coloured matter to *Pyretine*.—Berzelius, Traité de Chimie, vi. 636.

† See note at the foot of p. 380.

changes from a brown, first to green, then to brown, and lastly, to a dull red. If muriatic acid be added to water containing one-thirtieth part of this fluid, a distinct red shade is produced, though the solution was previously colourless; if the liquid after the addition of the acid be boiled, the colour deepens, and a vermilion precipitate falls, leaving the supernatant liquid of a dark orange. Nitric acid changes the colour of a dilute solution from bright yellow to brown. If heat be applied, the colour changes to dark yellow, then to red, afterwards to purple, and lastly to black, after which a dark precipitate falls, and the solution becomes of its original colour. Sulphuric acid occasions somewhat similar changes.

6. *Opium*. The oil obtained from opium is of thicker consistence than any of the preceding, and does not melt at so low a temperature, (160° F.) Water, and dilute acids act upon it, as upon that of *digitalis* and the others.

The liquid which is distilled along with it, and the water in which it is washed, contain a considerable quantity of meconate of ammonia. The smell of this oil is very disagreeable, but does not resemble the others. I would call it more narcotic.

7. *Lactucarium*. There is a considerable resemblance between the oil of this, and that of opium; the smell is not unlike. It melts in a lower temperature, about 110° F. The characters of these oils seem liable to some variations, especially with regard to their melting points. This appears to depend a good deal upon the heat which is employed in preparing them; if too much be used, their melting point rises, and they become much more solid. All those already mentioned were prepared as nearly as possible at the same temperature, so that probably the proportional differences are correct.

The empyreumatic oil of tobacco has been long known to be a virulent poison, but the poisonous properties of the oils of *Digitalis* and the others, already enumerated, have not yet been taken notice of.

The oils, properly so called, are nearly, if not entirely, inert. They owe their activity as poisons to a volatile substance, soluble in acids, and in water. To this I have not yet given a name, but would propose, that the word Pyro be prefixed to a name of similar termination with that at present used to designate active principles; thus, Pyro-digitaline.*

The following experiments will show the action of those oils on the animal economy.

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* This substance seems to possess properties intermediate between volatile oil and some of the active vegetable principles. It is obtained by neutralizing the Acid Infusion of the oil with potass, and distilling. In this form, it is combined with ammonia; analogous compounds are procured from the other oils by similar processes. I am now engaged in a more minute investigation of their chemical nature.

Exp. 1. Twenty grains of the empyreumatic oil of *digitalis* were made into an emulsion with mucilage, and thrown into the *rectum* of a strong rabbit. In five minutes the animal became drowsy; in nine it lost the use of its hind legs; in fifteen it was lying on its side, and when placed upright, immediately fell over again; in twenty minutes tremors almost amounting to convulsions came on; in thirty-five minutes it was seized with convulsions, the head was reflected on the back, and the extremities stretched frequently, and forcibly out. Short intervals of quiet succeeded, during which the breathing was laborious and rapid, and the action of the heart accelerated. After repeated attacks of convulsion, it died, one hour and five minutes after the injection of the poison. The thorax was opened immediately, and the heart was found contracting at the rate of 115° in the minute; the contractions did not cease till after the expiration of twenty-nine minutes. From some experiments which I had previously tried with the same oil on other rabbits, I suspect that the mucilage delayed the action, from enveloping the particles of oil, and thus to some extent preventing absorption.

Exp. 2. A solution, prepared by heating twenty grains of the oil in dilute acetic acid, was thrown into a rabbit's *rectum*; the symptoms were nearly the same as in the former, and death took place in an hour after the injection. The heart continued to contract for thirty minutes.

Exp. 3. The oil, from which solution used in Exp. 2, was prepared, was given to a rabbit; for some hours it refused food, and seemed rather stupid, but gradually recovered, and was apparently well next day.

Exp. 4. A drachm of the distilled liquid, (*Pyro-digitaline*), was thrown up the rectum of a young rabbit; it instantly became convulsed, and died in a minute and a half; the heart continued to act for forty-five minutes. In this instance, the convulsions were extremely violent, and were accompanied by distinct opisthotonos.

Exp. 5. The watery fluid, which is distilled at the same time as the oil, is highly poisonous from its containing a considerable quantity of that portion which is soluble in water. Two drachms of this liquid killed a young rabbit in ten minutes. The convulsions in this case were not violent.

From these experiments, I would draw the conclusion, that the oil of *digitalis* acts on the nervous system, and that, like tobacco, the directly sedative principle is not contained in the empyreumatic oil, but isto be procured by some of the processes adopted for the preparation of the vegetable alkalies.

Hyoscyamus niger.—*Exp.* 1. Twenty drops of the oil, previously well washed in dilute acid, were given to a rabbit. In a quarter of an hour it appeared giddy, and began to run in a circular track; in twenty-five minutes it appeared completely narcotised, and was locked up for the night. Next morning it seemed quite well.

Exp. 2. After an interval of two days, the acid solution of the oil above-mentioned, was given to the same rabbit; in ten minutes it became giddy, and commenced the same circular race which it had taken when the oil was given; in twenty-eight minutes it suddenly sprung forward, and spreading out its legs, remained in that position for some minutes. Slight spasms came on; when touched fell on its side, and could not again rise. It died forty-nine minutes after the exhibition of the poison. The heart acted for ten minutes after death.

Datura Stramonium.—*Exp.* 1. Six drachms of an acid solution, prepared from twenty grains of the oil, were given to a rabbit. In two minutes the animal was obviously affected; in five and a-half it fell on its side, and could not rise, although it made violent and repeated efforts to do so; at the expiration of thirteen minutes it was seized with convulsive stretching, and severe tremors of the limbs, accompanied by reflection of the head; in fifteen, with violent convulsions, succeeded by laborious breathing, and total insensibility. It died in nineteen minutes and a-half after the injection of the poison. The heart continued to contract for seventeen minutes after death.

Exp. 2. The oil from which the solution was prepared, was given to a rabbit and caused vertigo, but no permanent injury, as the animal was quite well next day, and has continued so ever since.

From the rapidity with which death took place in the first experiment, and in several others I have since made, I would say that the oil of *stramonium* is more poisonous than any of the other oils, with the exception of *Nicotiana Tabacum.*

Nicotiana Tabacum.—*Exp.* 1. Twenty grains of the oil of tobacco, which had been previously well washed in diluted muriatic acid, were given to a strong rabbit, in the form of emulsion; in ten minutes the animal appeared weak, and lay on its belly; in twenty it was affected with general spasm; in an hour seemed rather recovered and appeared very drowsy; next morning, seemed still stupid, but took its food with avidity; in the course of the day it completely recovered.

Exp. 2. About two-thirds of the acidulated solution of the oil used in Exp. 1. were given to a rabbit. In three minutes it ran rapidly about, apparently stupified, as it came against all the obstacles in its way. In five minutes it had entirely lost the use of its hind legs; in six, all consciousness seemed gone, the breathing was laborious; severe and general tremors supervened; and it died in eight minutes and a-half after the injection of the poison. The heart was beating at the rate of 80 in the minute, and continued to contract for twenty minutes.

Exp. 3. Thirty drops of the distilled liquid *(Pyro-nicotine)* were given to a young rabbit. It was almost instantaneously seized with convulsions, and died in about a minute. The convulsions were frequent, but without *opisthotonos.* The heart continued to act for thirty-five minutes.

The *Pyro-nicotine* seems to be as rapid in its action as *Hydrocyanic* acid; the quantity given was equivalent to about fifteen drops of the oil. The action of the tobacco oil is more rapid than any of the others, and there is less tendency to convulsion.

5. *Conium maculatum.—Exp.* 1. Six drachms of the acidulated washings of the oil were given to a rabbit; in ten minutes, it began to be affected, dragging its hind-legs, and using them more like a cat or dog than a rabbit; in twenty minutes, it appeared fast asleep, but could easily be roused; in half an hour, the muscles of the neck and back had lost all power, and it remained in whatever position it was placed. It died in forty-five minutes; the heart was acting very feebly, and continued to contract for about three minutes.

The six drachms were equivalent to about twenty-five grains of the oil.

Exp. 2. The acidulated washings of twenty grains were given to a rabbit, and caused death in less than an hour. The heart contracted for nearly ten minutes after death.

The empyreumatic oil of *Conium* seems a more purely narcotic poison than that of either tobacco or *Hyoscyamus*, and certainly much more so than that of *Digitalis* or *Stramonium*, which possess exciting properties.

6. *Opium.—Exp.* 1. The acid washings of thirty grains of the oil were thrown into the rectum of a rabbit; in a quarter of an hour the animal lost the use of its hind-legs, and became very drowsy; in half an hour it appeared rather revived, but rapidly got into a comatose state, and died forty-eight minutes after the injection of the poision. Before death convulsive twitchings of the head and limbs were observed. The heart contracted for about four minutes after death.

Exp. 2. Twenty grains of the unwashed oil, in the form of emulsion, were given to a rabbit; it died in three quarters of an hour, with precisely the same symptoms as mentioned in last experiment. The heart acted for six minutes after death.

7. *Lactucarium.* I have not yet examined the poisonous properties of the oil obtained from this substance.

ART. X.—*Cases of Dropsy and Gangrene occurring in a Family who had subsisted for some time on unwholesome Potatoes, with Remarks.* By ALEXANDER PEDDIE, Esq. Surgical Hospital.

CASE I.—On the 13th December 1832, I was requested to visit Mary Clapperton, ætat. 19 months, at the Causewayside, as an out-door patient of the Edinburgh Surgical Hospital. On her left cheek, half way between the mouth and angle of the jaw, there was a portion of integument of the size of a half-crown piece, dark, pulpy, and exhaling a fetid smell. Over the cheek and the greater part of the anterior surface of the neck, the parts were much swelled, very hard, and of a deep red colour; some parts, especially in the immediate vicinity of the sore, having a yellowish tinge, and others a bluish black appearance. The child had a dull listless aspect, a loaded tongue, and a quick feeble pulse.

The parents stated, that a few weeks before, she had had a mild attack of scarlet fever, the rash of which extended merely over the chest, and receded in the course of a day. A small hard swelling then appeared a little below the present sphacelated part, and after some blood was abstracted from it by leeching, the appearances just described were gradually displayed. On questioning the parents as to the kind of food used by the patient, they assured me that it was perfectly wholesome.

I immediately removed the mortified part, and found a considerable cavity underneath, and the integuments undermined in every direction, apparently extending nearly to the limits of the external appearances already described. The *Unguentum Resinosum* with an equal part of the *Oleum Terebinthinæ*, covered by a poultice, was applied to the sore; and this dressing was removed four times a day. I directed also that a purgative should be taken immediately, and that the child's strength should be supported by a liberal allowance of wine. In consequence of the above dressings to the sore, the application of the *Tinctura Saponis c. Opio* to the surrounding parts, and the exhibition of wine,—of which about one gill was taken daily,—in a few days the greater bulk of the swelling had diminished, the parts assumed a healthy colour, the ulcer showed a good healing surface, and the patient appeared lively. The wine was now withdrawn; sago provided as diet; and a lotion of the sulphate of zinc, with a compress and bandage, applied to the parts. Under this treatment the ulcer was completely cicatrized by the 12th January, and the patient was perfectly healthy.

Case II.—Alexander Clapperton, ætat. 6, was also seen by me on the 13th December. I found him sitting by the fire propped up with pillows; his face pale and bloodless, much swollen, particularly about the eyelids, and having a dull languid expression. His abdomen was tumid, the inferior extremities œdematous and hot on the surface, although the patient was exquisitely sensible to impressions of cold. His breathing was soft but hurried, and at times interrupted; and on auscultation the respiratory sound was much less distinct than usual. His pulse was small and rapid; tongue pale; breath fetid; urine scanty, and high-coloured; and his stools dark and offensive. On inquiry I found that he had been complaining much for ten days, during the few last of which he had been unable to lie in bed; and that about six weeks previously he had had an attack of scarlatina, in which the rash had been perfect, and his recovery easy. I desired him to have some purgative medicine immediately, and then pills containing calomel and squills, one to be taken every seven or eight hours.

14th. Rather worse. Breathing more laborious; fluctuation perceptible in the abdomen; and the œdema of the inferior extremities so great as to render the integuments tense and shining. Frictions with the tartrate of antimony ointment to be employed over the abdomen and chest, the calomel and squills to be continued, and to have a solution of the supertartrate of potass for drink.

15th. There is no improvement. Prescriptions continued.

16th. Worse in every respect. Suffocation frequently threatened. Pulse excessively quick, and extinguishable on the slightest pressure. To have wine occasionally, and two grains of the sulphate of quinine repeated twice in the day.

17th. Died.

On inspection of the body two days after death, the following appearances were observed. Great bloodlessness of the whole body. Strong general adhesions in the chest. The right lung displaced, and much compressed, by about two pounds and a half of clear fluid. The lung itself more fleshy than natural, and on the tip of its superior lobe a considerable deposition of lymph, in the form of a yellow transparent jelly. The left lung more natural in appearance. The mucous membrane of the *trachea* and larger *bronchia* thickened, softened, and extremely vascular. The cellular substance of the anterior *mediastinum* very much infiltrated with serum. A small quantity of serum in the *pericardium*. The heart pale, and containing in both ventricles large *polypi*. The abdomen exhibited evident marks of inflammatory action, with dropsical effusion to a considerable extent.

Case III.—Agnes Clapperton, ætat. 4, began to complain on the 17th December, the day of her brother's death. At first, the symptoms were languor, loss of appetite, costive bowels, tumid abdomen, œdematous legs, and scanty urine. In a few days these were succeeded by *pyrexia*, and afterwards by nearly the same dropsical appearances as have been described in the case of her brother, and also by the same termination on the 29th December. The treatment was somewhat different from that pursued in the former case. As the disease was seen from its commencement, bleeding and cathartics were resorted to on the first manifestation of febrile symptoms, and succeeded by the use of calomel and squills, the supertartrate of potass, a blister, and in the last stage, wine and the sulphate of quinine.

On dissection thirty hours after death, the appearances were these.—In the *thorax* considerable adhesions; about twelve ounces of serum effused into the right side, and eight ounces into the left; great hepatization (the red hardening of Andral) of both lungs; the mucous membrane of the air-vessels very vascular; and the heart extremely pale, and containing in its right auricle a large *polypus*. In the *abdomen*, a very considerable quantity of fluid effused; the liver much enlarged; a large *polypus* in the *vena hepatica;* the gall-bladder very œdematous, there being nearly a quarter of an inch in distance between its coats; the covering of the kidneys thickened, but they themselves natural, with the exception of a very slightly speckled appearance externally, and being rather softer than usual internally; portions of the intestines very vascular, particularly near the termination of the *ileum*, where also there were several tubercles, and a slight ulceration; the mesenteric glands, especially in this neighbourhood, most extensively diseased, being of various sizes, from that of a pea to a walnut, some of them solid, others containing a fluid resembling light-coloured pus; and the glands of Peyer in many parts very large and excavated.

In perusing these cases, the reader may be inclined to think that the dropsies and the gangrenous sore may naturally be explained by a previous attack of *scarlatina*. In this way I accounted for the first two cases. But on learning from the parents of Agnes Clapperton that she had not had the slightest symptom of scarlet fever while Mary and Alexander had it, I was compelled to seek for another cause to resolve the mystery. For a week after A. C. was taken ill, I could obtain no satisfaction. Although I could perceive that the family were in a state of extreme destitution,—that every member of it had a most unhealthy aspect,—yet my inquiries as to bad food were always met with an assurance that they had been living on nothing but what was perfectly wholesome. A neighbour of the family, to whom I next applied for information, hinted the probability of bad potatoes being the cause of the evil, as she knew for certain that the Clappertons had lately been subsisting almost entirely on such. I now renewed my efforts to ascertain the truth, and having directly charged the parents of the family with the use of this unwholesome diet, I obtained the following confession, apparently at much expence of feeling.

That for some time past the father had been out of employment, in consequence of which his family were left perfectly destitute; and having too much pride to beg, and seeing starvation before them, they went to the fields, and gathered those potatoes which are exposed on the surface of the ground, and which are uniformly rejected by the farmer as utterly unfit for human use. That the potatoes in question were frosted,* were watery in consistence, some of them of a green, and others of a deep purple colour, and all of them having an excessively bitter taste. That in gathering these potatoes from the field, they often met with people similarly employed, but did not think that any of them did so for the purpose of human food, but were merely obtaining them for pigs,—indeed, they had never heard of any one eating such potatoes. That this had been their aliment for upwards of six weeks previous to the beginning of December 1832, and that they had perhaps only a single meal of another kind once in eight days. That the potatoes had such a disagreeable taste as to be loathed, notwithstanding all the modes of preparation which their ingenuity could devise for rendering them more palatable. That in a very few days after using them, the whole family were seized with severe griping pains in the bowels, followed by diarrhœa of a green watery kind. That these bad effects continued with short intervals during the whole time that the potatoes were used, but that the children had not experienced them so severely or so constantly as the parents, which circumstance was accounted for by their occasionally getting a crust of bread from some of the neighbours.

To what extent the unwholesome food just described may have concurred with *scarlatina* in producing the effects detailed in Cases I. and II. I am not prepared to say; but that a noxious influence must necessarily have been exerted by it on the constitutions of the patients, and consequently have disposed their systems to diseased action, particularly to that of dropsical effusion, I think is very obvious.

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* These potatoes, it may be necessary to explain, lie on the surface of the ground, and are exposed to the influence of the sun through the day, and to frost during night. Some conceive that frost effects a *chemical* change in the constituents of the potatoe root, by converting its mucilage into sugar, from which acetic acid is speedily formed, and putrefaction induced. Others, again, consider that the watery part of the potatoe is converted into ice, which, occupying a larger space, separates the solid parts farther from each other, and produces, in consequence, a partial mechanical disorganization of structure.

In the case of Agnes Clapperton, however, it seems exceedingly probable that the bad potatoes were the sole exciting cause of dropsy. Being aware that a dropsical tendency is often shown after very slight attacks of *scarlatina*, my inquiries in this case were repeated and strict; but I was uniformly and positively assured, that although A. C. laboured under slight diarrhœa in consequence of the potatoe diet still in use, while her brother and sister had the scarlet fever, she had neither sore throat, nor rash, nor any thing which could in the smallest degree indicate the existence of that disease in her person. The parents too, could scarcely be deceived if any symptom of the fever had been present, having so simple and decisive a test to guide them, as comparison with the appearances exhibited by the other two children.

What gives additional strength to this opinion is the fact, that the same effect has often been produced by the same cause, —namely, dropsy from frozen surface potatoes, in the case of horses and cattle. I have examined several individuals connected with farms in different districts of the country, and they all agree that feeding cattle or horses even for a very short time on such potatoes, unless plenty of *fodder* was given along with them, would inevitably generate dropsical effusion. In some districts, to avoid the dreaded evil, the cattle, being principally of the milch kind, are never allowed such food; the horses only get it in sparing quantities; but the swine, which are supposed incapable of being injured by vegetable productions, however rank and corrupt, are permitted them in an unrestricted abundance.

A Banffshire informant states, that in his part of the country cases of dropsy among the cattle in particular are very frequent, owing to the use of these potatoes, without a sufficient accompanying proportion of other food. He represents the deleterious influence of them on the animal to be shown, first, by the presence of griping, evinced by tossings of the head, movements of the legs, especially the hind ones, and rolling on the ground; secondly, by severe frothy purging; then by difficult respiration; and lastly, by serous effusion, which proves speedily fatal if strong purgatives, diuretics, and the last resource, namely tapping, are not successful.

Striking points of analogy cannot fail to be observed between the facts mentioned in the above statement and those in the case of Agnes Clapperton. Previous to the dropsy, she had the griping and purging to a considerable extent, but certainly not by any means so severe as her father and mother; a circumstance which may perhaps explain the cause of their immunity from dropsical effusion; for it does not seem an unlikely supposition, that, had nature made the same efforts in her case to throw off the poisonous matter, she too might have escaped the fatal disease.

I may here mention, however, that her father had a most unhealthy, feeble appearance, and her mother looked even worse, had various complaints, and among the rest had an abortion of a fourth-months pregnancy, all which ailments were not improperly attributable to her late unwholesome mode of living.

With regard to the manner in which the potatoes had acted in generating dropsy, and the appearances exhibited by dissection, I will not pretend to give a decided opinion.

Indigestible substances taken into the stomach, and improper modes of living, have by several authors been admitted as the cause of dropsies. Venables, in his Clinical Reports, p. 14, considers such causes as undeniable, and states a case of dropsy occurring from the use of fat bacon and cheese.—Dr Ayre and several other authors, give cases both of *hydrothorax*, *ascites*, and *anasarca* occurring separately, and in conjunction, from indulgence in what are called the pleasures of the table, and the immoderate use of fermenting liquors. In such cases as these, the disease must have originated in consequence of general debility, produced by the imperfect assimilation and conversion of aliment into chyle;—by the scanty proportion of nourishing matter taken into the blood; and by the enfeebled condition of the whole vascular system from the existence of long-continued gastro-intestinal irritation. Now, though the unwholesome potatoes so often referred to might not give rise to dropsy, by any specific operation, they must have affected the system in the way that other indigestible substances would do.

The mass of disease found in the mesenteric glands of Agnes Clapperton may throw some light on the pathology of her case. It is well known that bad food is one of the great causes of such degenerations; and in her case, where the structure of the glands was so much diseased, it was impossible that the fluids could circulate freely; and perhaps the fluid resembling pus observed in so great quantity in some of the glands was in reality obstructed chyle. Dr Ayre, p. 8, states a case of ascites proceeding from mesenteric disease, and remarks, that inflammatory action is propagated from the glands to the serous membrane investing them; —"whence, as from a point, it gradually spreads along the membranous duplicature of the cavity."—In the case of Agnes Clapperton, a similar diffusion of inflammatory action may have taken place.

PART II.

CRITICAL ANALYSIS.

Art. I.—*The Cyclopædia of Practical Medicine.* Edited by John Forbes, M. D. Physician to the Chichester Infirmary, &c.; Alexander Tweedie, M. D. Physician to the London Fever Hospital, &c.; and John Conolly, M. D., late Professor of Medicine in the London University. Part II. to XIV. or Vol. I. pp. 713, and II. pp. 894. London, Royal 8vo, 1832 and 1833.

A considerable interval has elapsed since we noticed the first part of the first volume of this work; and nothing but the want of space to bestow on it that attention to which such a work is entitled, has caused it to be delayed till the present time. Now, however, when the second volume is completed, and the part which forms the beginning of the third is before the public, we have the means of forming a judgment of its general merits more justly than we could have done from a smaller proportion of the work.

In the short notice which we already took of the contents of the first number, we could do little more than specify the subjects considered, and express a general opinion of the style in which they were treated. In the view which we propose to take of the contents of the succeeding numbers, though we may find occasion to enter a little more fully into details, we regard it as superfluous to notice every article. In such a work, arranged as it is in the alphabetical order, many subjects must be introduced which claim attention, rather as integrant parts of a general body of medical, pathological, and therapeutic information, than by reason of their intrinsic importance. Such articles, however necessary in the work, may be overlooked in any critical sketch of its contents; and in this respect, therefore, we shall exercise our discretion.

The article *Apoplexy* embraces the two divisions of cerebral and pulmonary, the first by Dr Clutterbuck, the second by Dr Townsend.

The former author gives in the first division a full and useful account of the most recent views on the etiology, pathology, and treatment of that disorder. In considering the pathology, Dr Clutterbuck enters into an examination of the views entertained by Drs Monro, Kellie, and Abercrombie, on the question of the compressibility of the brain, and finds occasion to reject the doctrine, that the morbid changes found in the brains of apoplectic subjects are the cause of the disease, and argues that it is more reasonable to infer that pressure of the organ by interruption of the motion of the blood in its vessels is the true cause of the suspension of the functions.

The method of treatment Dr Clutterbuck modifies according to the nature of the remote causes. In apoplexy consequent on concussion, he recommends blood-letting and depletory measures only when symptoms of inflammation are present; but disapproves of the indiscriminate and liberal use of this remedy in most of the other forms of the disease. In that from rupture of vessels, he maintains, it can have no effect, unless that of obviating consequent inflammation; and he equally condemns its use in the serous variety; and it is only when the disease depends on the vascular distension succeeding to insolation, the hot bath, mental exertion, or positive meningeal inflammation, that the author thinks this remedy admissible. We doubt whether we can adopt all his views; but the article is one of some interest, and contains various points very necessary to be known and studied.

In the article on *Pulmonary Apoplexy*, Dr R. Townsend has collected the most important facts on the pathology, characteristic nature, and treatment of this disease. Dr Townsend modifies the principles established by Laennec, by showing that there is a still more intense form of this change of the pulmonic tissue, in which the part affected is diffuse and uncircumscribed, soft and inelastic, and when divided exhibiting a mixture of fluid and clotted blood, infiltrated through the pulmonic parenchyma, which is broken down and dissolved. Dr Townsend conceives that the distinction consists in the blood, in the form described by Laennec, being effused into the air-cells and then coagulated, and in the latter being in the cells of cellular or filamentous tissue. Dr Townsend also describes another form of pulmonary apoplexy, in which the blood not only breaks down the parenchymatous structure of the lung, but likewise ruptures its investing membrane, and escapes into the cavity of the pleura. This, however, it is manifest, is merely the intense form of the disease, modified by the accidental circumstance of situation, contiguous to the surface of the organ.

The therapeutical directions are very well delivered, and rationally appropriated to the several forms of the disease.

Of the articles on *Aneurism of the Aorta*, *Arteritis*, and *Dilatation of the heart*, by Dr Hope, it is enough to say, that they bear the characters of the usual ability of that gentleman, whose separate treatise we took occasion lately to consider at sufficient detail.

In his account of the *Diseases of Artisans*, Dr Darwall of Birmingham has given an interesting sketch, the only fault of which is its brevity. Dr Darwall very properly rectifies several of the mistakes and rather hasty conclusions of Patissier, whose work is in many respects a mere repetition of what has been written since the time of Ramazzini. The manner in which Dr Darwall treats the subject may be understood from the following statement.

"The groundwork of the arrangement is founded upon the causes of these disorders; and we first of all have two classes. The *first* includes the diseases caused by *moleculæ*, which, mixed with the air in the form of vapour or fine powders, are respired by the workmen, penetrate into their organs, and disturb their functions. The second class comprehends the diseases caused by excess or defect in the exercise of certain parts of the body. Under the first class are comprehended, 1. diseases produced by mineral particles; 2. those arising from animal particles; 3. those which result from vegetable particles; and 4. diseases which are produced by the mechanical action of *moleculæ* or fine powders arising from mineral or vegetable substances. The second class embraces, 1. diseases arising from the effects of *moisture and temperature*; 2. diseases arising from *undue or excessive muscular exertion of particular parts or organs*; 3. diseases arising from *sedentary habits*."

Dr Darwall first enters on the consideration of the effects of labour abstractly considered, and makes some judicious observations on the limits within which the hours of labour ought to be restricted, and the earliest period at which children ought to be allowed to work at manufactories. He adopts the opinion of Dr Baillie, that the age of seven is the earliest limit for the latter purpose, and that then the hours of labour should not be allowed to extend beyond four or five for the first year, and six or seven for the second and third; and that the hours of labour should at no time be continued beyond ten hours daily. Reasoning from what we have observed of the effects of early occupation of children, we should say that even the age of seven is premature, and that labour or exertion of any kind in the form of work is injurious at that period in preventing the due and sound developement of the different classes of organs.

Among the vulgar errors entertained on this subject, Dr Darwall properly corrects one which has been often and strongly impressed both by professional and unprofessional persons, regarding the noxiousness of the effluvia of animal bodies. These are generally supposed to be very injurious, notwithstanding the strong facts which many years ago Bancroft adduced to show that they were not.

"It will readily be perceived that the animal effluvia to which the class of workmen just alluded to are exposed, differ much from every other in the more complete decomposition which the matter has undergone, and the greater accumulation of the resulting gases. Butchers, chandlers, &c. respire these gases much more diluted with air, and appear not to be afflicted by any diseases in consequence of them. We are much disposed to believe that the disagreeable odour of the workshops has been the principal reason of their reputation for unhealthiness: this opinion is confirmed by the testimony of Dr Bancroft, who has collected many facts in corroboration of it. Besides others, he mentions the establishment of a manufactory of adipocire at Conham, near Bristol, which was not in the slightest degree injurious to the neighbourhood, though the smell was most offensive. To these he has added his own experience at Rosetta, where he was daily exposed to the effluvium of putrid bodies, and felt no inconvenience; and a communication from Mr Lawrence, in which that gentleman says that his experience, as demonstrator at St Bartholomew's Hospital, was strongly corroborative of the opinion that putrid animal effluvia are not usually detrimental to health.

"That animal effluvia are not, in this diluted state, productive of fever, we may mention another proof, which is within our own knowledge, and which we know would be confirmed by all the medical men acquainted with the spot. In one part of the populous town of Birmingham, many slaughter-houses were congregated; and yet, if any situation in the town could be mentioned in which the fewest cases of fever have occurred, it is in their neighbourhood. M. Patissier bears his testimony to catgut-makers not being liable to putrid and malignant fevers, and gives what he believes the explanation of it. "S'ils ne sont pas sujets aux fiêvres putrides et malignes, c'est qu'ils travaillent dans des lieux ouverts, où l'air circule librement." We believe, that the pallid countenance, languid appearance, and swelled legs, are neither peculiar to catgut-makers, nor the consequence of their employment; although this author intimates a connexion between these circumstances and the occupation.

"But though observation appears to warrant the conclusion that butchers are not subject to fevers, nor any other disorder which can be properly referred to *putrid* effluvia, there seems some doubt whether they do not too freely absorb nutritive particles, as they are particularly liable to the diseases arising from plethora, more especially determinations of blood to the head. The principal circumstance adduced as giving some probability to this notion, is, that cooks, whose appetites are proverbially bad, evince the same symptoms, and frequently fall victims to the same maladies. We are inclined to believe, however, that some errors exist in both cases. From the facility with which butchers can obtain animal food, they usually much indulge in it, and many have acknowledged to us that they are in the habit of eating it three times a day. The business of a cook, likewise, compels him to be perpetually tasting the various dishes which he is composing, and it is impossible to say how much is in this manner consumed; at any rate, the food is subjected to the stomach in the mode most favourable to digestion, and its nearly total conversion to the nutrition of the body.

"Butchers evidently enjoy immunity from consumption. M. Patissier says, 'On a remarqué qu'ils meurent rarement de la phthisie pulmonaire." Dr Withering has stated, in a letter to Dr Beddoes, which was published by the latter in 1793, that butchers and the makers of cat-gut are exempt from consumption. To these classes Dr Beddoes has added, from information otherwise obtained, soap-boilers, the fishermen and the fishwives who live in the neighbourhood of Edinburgh. From our own experience in a dispensary of considerable extent, we believe that these remarks are correct; chiefly, however, with respect to tubercular consumption. From those affections of the bronchial tubes which were formerly confounded with phthisis, we do not think they are equally free.

"We shall dismiss, with a very few remarks, the remaining orders of this class. They refer chiefly to the diseases incident to medical men, and to those persons who are employed in attendance on the sick. It is generally admitted that in few instances have the disorders to which such individuals are subjected been accurately traced to their employment, excepting those which have evidently their origin in contagion or infection. With respect to anatomists, their diseases are chiefly the results of accident, and diarrhœa occurs in those who are unaccustomed to dissection. As to the adage of physicians, 'aliis inserviendo consumuntur, aliis medendo moriuntur," we suspect that there are many young physicians waiting for the exit of their *aged* brethren, who would be able to contradict it."—Pp. 155, 156.

Dr Roget gives a very complete and interesting view of the phenomena and physiological and pathological theory of *asphyxia*. But though his principles are in general correct, on a few of them we feel it requisite to offer some remarks. This author follows the majority of physiologists, in representing the essential circumstances of that state to commence in the minute pulmonary vessels, in which the blood is made by the more or less immediate suspension of respiration to stagnate, and that hence the brain and heart are affected, but in a secondary manner only. He conceives, that, in addition to the transmission of unrespired blood to the organs, the capillaries of the lungs become paralysed, and thereby incapable of transmitting blood to the pulmonary arteries, left auricle, and left ventricle, which are therefore found nearly empty of that fluid.

Without pretending to criticize minutely this view, which is on the whole well founded, we may remark that the circumstance of paralysis of the pulmonary capillaries is an assumption which may or may not take place, and that the inability or *inertia* which it seems intended to designate appears to be unnecessary to the process of asphyxia. That the blood first flows slowly through the pulmonary capillaries in asphyxia, and then is altogether suspended, and eventually stagnates, is, we conceive, a matter of fact. That the cause of this stagnation is paralysis is, on the other hand a matter of opinion entirely. We must, however, do Dr Roget the justice to say, that he declines entering on the question of the properties of the pulmonary capillaries, and consequently, we cannot with propriety scrutinize the soundness of this opinion so fully as we should otherwise do. But we take the present opportunity of observing, that physiologists and pathologists have erred in regarding asphyxia as a process of extreme simplicity, and have overlooked the fact, that, though it depends essentially on interruption of respiration, the effects to which it gives rise in the different organs are very complicated. The state which he denominates paralysis appears to be simply cessation of the motion of the blood through the pulmonary capillaries, in consequence of the interruption of the mechanical phenomena of respiration.

It may, in the first place, be regarded as established, that respiration consists not simply in aeration of the blood, but in the circumstance of this process being effected by alternate inspiration and expiration. The continued supply, or rather the retention, of the best and purest air in the globe is not adequate, unless it is forthwith expired, to aerate the blood so perfectly as a small quantity of the most heated impure steam of a theatre, which has been repeatedly inhaled and exhaled by the lungs of several thousands of human beings; and asphyxia may be produced as perfectly by distending the lungs with the purest atmospheric air, as under the vacuum of the air-pump, or by the presence of carbonic acid gas, or by a ligature round the windpipe. In short, any cause which suspends the mechanical part of respiration asphyxiates as effectually as those which interrupt the chemical changes.

It may next be regarded as established, that the alternate motion of the thoracic parietes is the essential cause of the motion of the blood in the communicating capillaries of the pulmonary artery and veins, since we know that during every inspiration the blood moves more readily through these vessels, and at every suspension of inspiration, and towards the close of expiration its motion is retarded, and appears finally to stop altogether. Now it can scarcely be doubted, that in the same manner the suspension or interruption of the mechanical changes of respiration operate in retarding and finally interrupting the motion of the blood or the pulmonary capillaries; and if this view be well founded, which we conceive it is, the idea of a palsy of the capillaries must be regarded as gratuitous. There are indeed stagnation and congestion, and consequently over-distension of these vessels,—a condition which has been repeatedly attributed to *paralysis*, but we respectfully conceive on inadequate grounds, since the loss of power is not primary or dependent on direct lesion of any well known property of these vessels, but the result of the cessation of the alternate motions of the chest and diaphragm.

In the account of *Asphyxia from Strangulation*, under the head *particular forms of asphyxia*, Dr Roget gives an account in general accurate of the principal effects of that mode of death. But we must be permitted to observe, that Dr Roget either confounds under the general name of strangulation, that mode of death, properly so called, and suspension by the neck, or he gives too limited a view of the effect of this species of death. The only good, pure, and simple specimen of strangulation is death by the bow-string, in the manner practised by the Turks, in which the ligature is applied round the neck, and drawn so tight as to interrupt at once the alternate entrance and exit of air by the windpipe. Yet, even in this species of *asphyxia*, the injury is not altogether so simple as the experiment of Dr Monro, and the conclusions of the present author represent it to be. From the tightness with which the ligature is applied round the neck in pure strangulation, or according to the method by the bow-string, the motion of the blood is simultaneously stopped, the return of the blood by the veins is entirely interrupted; and though the principal cause of death is doubtless, as represented by Dr Roget, interruption of the respiration, a powerfully accessary one is the extreme congestion of the vascular and venous system of the head generally, and the brain particularly. We must, however, allow, that Dr Roget admits the probability of the congestion accelerating the approach of death by suspension, and divesting it of some of its pain.

Asphyxia by suspension is a still more complex process; and not only has the weight of the body great influence in modifying the effect of the mere ligature, but the particular mode in which the suspension is effected produces various injuries, which, independent of the mere interruption of the mechanical process of respiration, might be sufficient to extinguish life. In simple ordinary suspension, in which the cord is placed at the anterior part of the neck, it occasionally happens that the thyroid cartilage and larynx are much injured, or even ruptured, and almost invariably the base of the tongue is forcibly thrust against the back of the throat, so as to obliterate completely the entrance or exit of air. Besides these effects, if the body is weighty, or is made to drop much, the whole neck is stretched to such a degree, that not only are the diameters of all the blood-vessels contracted, but the muscles, nerves, ligaments, and soft parts in general are very much stretched or even ruptured, the *vertebræ* may be luxated, fractured, or displaced, and the spinal chord itself may be ruptured, or at least much disorganized. A singular, and we must at the same time add, a very brutal method, of rendering this result quite certain, is occasionally practised on the continent by some accomplished executioners, who either leap on the shoulders, or lay hold of the legs of the unfortunate criminal, and swing for some time in this manner, with the additional weight and force of their persons, so that if the drop be considerable, the *vertebræ* are either at once or very soon luxated, and the spinal chord ruptured, or detached from the brain. At the Cape of Good Hope under the Dutch Government, the executioner puts the culprit to death by leaping on the shoulders, and, though supported by his hands, continuing, by a succession of leaps, in this position, to throw his whole weight on the trunk of the criminal until life is extinct. It is on popular authority asserted, that one London executioner was in the habit of despatching the victims of public justice, by grasping the legs and swinging in this manner, till he was certain that death was complete.

Dr Roget adverts in a general manner to smothering as a cause of *asphyxia*, a subject which has certainly been too much neglected. This mode of asphyxial extinction is perhaps not the least complicated, since it in general not only suffocates by excluding air from the mouth and nostrils, but by palsy of the muscles of respiration, in consequence of the mass, which generally rests on the person, and crushes or compresses the whole body, as in the case of miners and others, on whom masses of earth have fallen. "Death will in that case," he remarks, "be induced with greater rapidity than from most other causes of *asphyxia*; because the pressure will force out nearly the whole of the air contained in the chest, and will preclude any farther movement of dilatation or contraction of its sides. The circulation is quickly arrested, and no opportunity is afforded for the accumulation of blood in the venous system. The body accordingly will present no discoloration of the skin, no turgesence of the veins, and no engorgement of the pulmonary vessels."

This, he allows, is an extreme case, and doubtless the instances of persons who have been dug alive out of ruins, banks of earth, and similar situations, show that if a small quantity of air is left, and if the mouth and nostrils be not utterly plugged up, death does not immediately ensue. The smothering which is probably most directly fatal is that which takes place, when in great crowds, children and delicate persons are so crushed by multitudes of human beings, as in theatres, or in cases of alarms of fire, that no time is left to allow the chest to expand in those individuals who are trodden under foot.

An example of a peculiar species of smothering of a very singular nature is given by Dr Roget, as a modification of this species of *asphyxia*; and we may add, that it shows how much depends on the continuance of the mechanical motion of respiration.

> " An athletic black of pugilistic celebrity, had been selected from the fine form of his chest, and well-marked expression of his muscles, as an academic model. It was wished to obtain a cast of his body; but this being attempted at one operation, and in one entire piece, as soon as the plaster began to set, he felt on a sudden deprived of the power of respiration, and, to add to his misfortune, was cut off from the means of expressing his distress. His situation, however, was fortunately perceived, just in time to save his life, by breaking his bonds, and relieving him from the extreme peril in which they had placed him."

Of the treatment, we have only to say, that it is in every respect rational and judicious.

The article on *Asthma* by Dr Forbes bears the usual marks of accurate knowledge and sound judgment of that gentleman, and may be safely pronounced to be the best account, pathological and practical, of that distressing disease, extant. We are not, indeed, prepared to adopt all the views of the intelligent author; and perhaps we would be inclined to attach less importance than he seems disposed to do, to the alleged discovery of the muscularity of the bronchial tubes, as described by Reisseissen, or the part which these fibres are represented to perform in this disease. This, however, is mere matter of opinion; and for any difference of this kind, we never think less favourably of the reasonings and inferences of the individual, by whom it is entertained.

Every one, indeed, is aware of the obscurity of the pathology of asthma, and the extreme difficulty which has always been experienced in explaining in a satisfactory manner the periodical occurrence and temporary existence of the disease; and hence, where there is room for difference of opinion, it is but just that every one should be allowed to adduce in favour of that which he conceives most tenable, the facts and arguments which he believes most competent to defend its applicability. The idea of the spasm of the bronchial tubes maintained by Cullen always seemed questionable, on the ground, that the muscularity and irritability of these canals was, notwithstanding the authority of Malpighi and Willis, either not ascertained, or altogether fanciful. The accurate reasonings and observations of Dr Bree showed, that, even supposing their existence had been well established, spasm of their fibres was not sufficient to account for all the forms of asthma, and that it was only in the second one,—that considered in his twelfth section, as resulting from what he rather vaguely names *aerial irritation* in the lungs, that he admits this circumstance to be possible, while it is quite incapable of being proved. Dr Bree, therefore, came to the conclusion, that asthma consists in general in a spasmodic action of the external respiratory muscles, excited to reaction, in order to get rid of irritation of the lungs, or their bronchial membrane.

This hypothesis of the cause of the asthmatic paroxysm, as well as another which refers it to the muscles of the larynx, Dr Forbes thinks inadequate, after very full consideration of the phenomena exhibited by the chests of patients during the fit, to account for the phenomena. Without, therefore, denying the laborious action of the external muscles and those of the glottis, he contends that the chief site of constriction is shown to be in the internal air passages, *i. e.* the bronchial tubes;—1. because asthma is very commonly dependent on a morbid state of the bronchial membrane, by an increase of which paroxysms are induced; 2. because the resolution of a paroxysm is almost invariably accompanied by a great increase of secretion from the *bronchi*; 3. because diseases of the bronchial tubes, inducing swelling of the membrane and consequent contraction of the canals, produce phenomena very similar to the asthmatic paroxysm; and 4. because auscultation during the paroxysm discovers the presence of fluids which can be seated in the bronchial tubes only.

It is unnecessary to follow Dr Forbes through his instructive disquisition on the different varieties of asthma; but it may be interesting to exhibit the general results which he thinks himself warranted to deduce.

"1. In the disease properly termed asthma, there is always present a spasmodic contraction of the muscles of the bronchi, and sometimes a similar state of the muscles of the trachea, larynx, and external muscles of respiration.

"2. In a small proportion of cases, the spasmodic stricture may take place (idopathically or symptomatically) without any previous disease of the affected parts.

"3. In the great majority of cases the spasmodic constriction is dependent on a pre-existing irritation of the mucous membrane of the air-passages."

"4. Phenomena of a very similar character are sometimes the consequence of a congested state of the mucous membrane of the air-passages, without any attendant spasm.

"5. The congested or tumefied state of the mucous membrane almost invariably accompanies the paroxysms, whether this state be a cause or a consequence of the spasm.

"6. The violence of the paroxysms is modified no less by the degree of the congestion than by the degree of the spasm; a great congestion with slight spasm producing, probably, the same result as a slight congestion with a great degree of spasm.

"7. In some cases, the tumefied or congested state of the bronchial membrane passes off entirely with the spasm, without any exhalation from the vessels or augmented secretion from the mucous follicles. More commonly there is a simultaneous relaxation of the spasm of the muscular fibres, and an exhalation from the mucous coat. This exhalation most commonly puts an end to the disease for a time; not unfrequently, however, the congestive passes to a more permanent state of inflammatory irritation, under the form of pulmonary catarrh or bronchitis."—P. 193.

These are followed by some valuable observations on the morbid anatomy of the disease, then by the rules for diagnosis, next by the consideration of the causes of the disease, and lastly, by a very able and judicious estimate of the remedial measures. The merit of the latter part, and its decided superiority over most other systems of therapeutic rules which we have seen for the management of this perplexing malady, consists in the skilful appropriation of different classes and kinds of remedial agents to the different varieties of the disorder, and the habits and idiosyncrasies of the individuals affected. The remarks on the influence of climate, mineral waters, and diet as sanative means cannot fail to be perused with great interest and advantage.

The two articles, *Auscultation* and *Exploration* of the *Chest*, by the same author, exhibit clear and full views of the best established facts on this important and difficult part of medical diagnosis. These it is unnecessary to analyse; but after a careful perusal of both, we can safely recommend the study of them to practical physicians who wish to became familiar with the art of recognizing the different diseases of the heart and lungs. Both articles possess the peculiar recommendation of being written by a physician, who, while he was the first to make known in this country the advantages of the method of mediate auscultation, has continued to connect with it all those improvements and rectifications which it has since undergone by the combined efforts of many observers.

We have only to add, that the article on *Bathing* by the same author, exhibits a full and correct view of the physiological effects of the different forms of bath, the cold, cool, temperate, tepid, warm and hot,—of their employment in the cure of disease, and of the rules and cautions which require to be observed in order to insure the sanative effects of each.

The essay on *Morbid states of the Blood*, by Dr Marshall Hall, exhibits not a complete but a very useful view of the changes induced in the parts of that fluid in different diseases. The principal object of the paper appears to be to show, that in disease the physician ought not to overlook the state of the circulating mass; and Dr Marshall Hall gives the following summary. 1. In many diseases, as fever, inflammation; chlorosis, scorbutus, there are undoubted morbid changes induced in the blood itself; 2. that other morbid changes are induced by impure atmosphere and an unwholsome diet; 3. that various miasmata in the atmosphere, and various poisonous qualities of food, produce morbid changes in the blood; 4. that suppressed secretions induce morbid changes in the blood; 5. that excessive secretions induce other morbid changes in this fluid; and, 6. that an affection of the innervation, or of the nervous system, may, as is observed on a division of the eighth pair of nerves, produce its peculiar changes in the circulating mass." —P. 275.

More minute and detailed views, are given under the heads of individual diseases.

The same author gives a short account of a subject which has long been his peculiar study, and of which, it may be presumed he is extremely well qualified to treat,—the effects of blood-letting, either employed as a remedy for the cure of disease, or when accidentally, or otherwise, carried to an extent injurious and prejudicial.

An article, somewhat elaborate, on *Inflammation of the Brain*, is the joint production of two authors. The first part, or that on *Meningeal Inflammation*, by Dr Quain, presents a view of the semeiography and morbid anatomy of that variety of the disease.

The second, which is the production of Dr Adair Crawfurd, is devoted to inflammation of the cerebral substance, or what he, by a singular enough piece of hybrid neology, denominates *Cerebritis*. It is frivolous, and perhaps finical, to criticise denominations; but we must take this opportunity of saying, that the present one is improper on three accounts. It is, in the *first* place, erroneous, in so far as the ancient pathologists never applied a name terminating in *itis* to any but membranous inflammations,—a fact which every beginner in nosology and nomenclature thinks himself justified in disregarding, in defiance of classical custom, which they nevertheless profess to follow. *Secondly*, if it was thought immaterial to disregard this rule, another is nevertheless violated, by adding to a Latin term a Greek termination, and thus forming a species of hybrid product which could never be recognized by good taste, and which the ancient authors themselves strongly reprobated. In the *third* place, we cannot see what is the advantage of being at the pains to violate two very obvious principles, for the purpose of introducing a new term, when it is well known that one was already in use by Frank, *Encephalitis.*

Dr Crawford gives a view, in general correct, of the phenomena and effects of cerebral inflammation, and illustrates the operation of various causes in inducing the disease. The paper shows, nevertheless, that he has not in all cases gone to the original sources of information. Of one of his authorities *Jemina*, we are not completely ignorant. A physician of Turin, named *Jemina*, wrote an account of an epidemic in that territory, in which subacute inflammation of the brain occasionally took place, and left its characteristic traces. But it is obvious that this work has not been consulted by the author. Gendrin is repeatedly mentioned as Jendrin; and it appears not methodical to the eyes of the pathologist to mention Morgagni before Bonetus.

The same gentleman is the author of an essay on *Coma*, which may be conveniently noticed along with the present. It is well known that this is the name for a particular state in which consciousness, sensation, and voluntary motion are for the time obliterated, and which is, indeed, generally regarded as a symptom of more or less affection of the brain. The present author, without attempting a formal definition, regards it as either primary, or supervening secondarily on certain affections of the brain. He represents it further to take place in two conditions of the brain; one during pressure from congestion or inflammation, effusions of fluids, tumours of the organ or its membranes, or the effects of internal injury, as depression, &c. the other from deficiency of nervous energy, as during exposure to intense cold, from concussion, or from *anæmia* after excessive evacuations. The stupor resulting from the effects of spirituous liquors and stimulating doses of the narcotic drugs, he ascribes to the former; while he seems to refer to the latter species, the effects of the upas, tobacco, belladonna, and others which kill by immediately extinguishing the nervous energy.

It is extremely unfortunate that we possess so little accurate knowledge on the various states of the nervous system, induced by agents denominated narcotic, several of which do not operate on the brain directly, but on it only by the medium of the circulation. Meanwhile, the author of this article is perfectly right in distinguishing the different forms of *coma* with a view to treatment; and he justly observes, that there are few situations requiring nicer or more delicate discrimination than whether, in any given case of coma, it is requisite to detract blood, and to what extent this remedy may be safely and properly carried.

With *Cerebral Inflammation* and *Coma*, we may associate the article *Convulsions*, by the same author. The history of the different sorts of convulsion is delivered in a clear and attractive manner, and will communicate a correct idea of the nature, train, and circumstances of these anomalous and alarming motions. The principal peculiarity deserving notice in the theory of these motions is, that the author maintains that irritability is in part derived from the nervous system. "Although the muscles may appear to possess a certain degree of special irritability, it is incontrovertible that they derive their power of contraction from the nervous influence transmitted to them by the brain and different parts of the nervous system."

Now this is a confused and obscure, and further an erroneous mode of representing the relative connection of the muscular and nervous system. It is doubtless a historical fact, that Whytt, Monro, Cullen, and most of the followers of the latter physician, maintained that the irritability of the muscular fibre was derived from the nervous system, in direct opposition to the clear and conclusive experiments and reasonings of Haller; and it is also a historical fact, but a mortifying proof of the effect of imitation and the influence of authority, in propagating and perpetuating error, that this absurd dogma has been repeated by all partial and imperfectly learned physiologists to the present day. Indeed, this doctrine has been and still is so closely connected with the mysterious powers ascribed to the nervous system over every texture, organ, and function of the animal body, that it is not wonderful that it is still allowed to retain its influence, since it explains without effort many phenomena of which we must otherwise confess our ignorance.

This, however, is not the way to advance the progress of accurate science. If there is a fact well ascertained in physiological science, it is, that the properly named *irritability*, if understood in the sense defined by Glisson and Haller, is peculiar to muscular fibre, and is inherent in that fibre, independent of the nervous system, or any other system. In its motions and actions, it is doubtless under the influence of the nervous system, exactly as we know that a muscular fibre is under the influence of the vascular system, and cannot contract without a due supply of blood. But this influence does not extend the length of communicating the property to the fibre, no more than it can communicate irritability to a tendon, a ligament, or a bone. The influence of the nervous system is limited to placing the actions resulting from this irritability in all the organs in unison or harmony with each other, and, in addition to this, in the case of the voluntary muscles, to subjecting these to the influence of the will.

This subject has occupied more space than it should have done, had we not conceived it requisite to advert in the most decided manner to an erroneous proposition, which, though not peculiar to the present work, cannot fail to continue its influence, when formally brought forward in the manner now noticed.

In his subsequent application of the theory of nervous influence there is not much to censure; and, indeed, the customary principles are brought forward in a very clear and intelligible manner. The general explanation is, that, in convulsions the influence of the brain and nervous system are suspended. But some inconsistency is committed in stating that irritation of the brain may be sufficient to cause convulsions; while immediately after the author remarks, that the existence of convulsions does not always necessarily imply that there is an affection of the brain; and, consequently, the author takes occasion to remark, that the theory of Cullen, Dr John Clarke, Brachet, and others, which refer them always to the brain, is untenable.

It is singular that while this doctrine of the nervous system being the source of irritability, gives rise to so much inconsistency, authors like the present should not have perceived how much more simply and satisfactorily the phenomena and varieties of convulsions are explained according to the doctrine which considers irritability as a property inherent in muscular fibre. The actions and motions produced by this property are under the influence of two agents, the nervous system, and the state of its vascular system and circulation, and the quantity and quality of blood sent to the muscle. In the healthy state, so long as the circulation of the nervous system remains sound, so long as the matter of the nerves distributed to the muscular system is in the healthy state, and so long as the distribution of blood to the muscle or muscles is perfect and natural, so long the whole of the muscular organs act in unison with each other; the fibres neither contract too forcibly nor too feebly; they contract and relax regularly; and the voluntary muscles contract only when the individual wills to move his limbs or person. Subvert this influence by altering the circulation of the nervous system; impel an unusual quantity of blood into the brain, the spinal cord, or any of the nerves; prevent the return of that which is there, or suddenly deprive these parts of their supply of blood;—injure or destroy the substance of any set of nerves at their origin, in their course, or at their termination; irritate them by puncture; wound or lacerate or irritate the brain, either directly by a stimulus applied to its substance, or indirectly by a stimulus applied to the substance of any nerve arising directly from that organ; or finally, either interrupt the supply of blood going to a muscle, or prevent the return of what is there, and cause congestion, or send it blood of unfit qualities, for example, blood not duly arterialized;—and in either case you will have convulsions, more or less violent and more or less enduring, not from any change in the irritability itself, but from change in the powers by which the actions of irritability are regulated. To use a sort of coarse mechanical illustration, these powers are the regulators of the property, but do not constitute the property itself. The nervous system exercises a general control over the actions and motions produced by irritability, maintains its equipoise, and prevent its excessive or unnecessary expenditure; but it cannot communicate what it does not possess.

We have only to add, that the article is in other respects good, and gives a useful view of the treatment.

The kindred subjects of *Coryza*, *Catarrh*, *Bronchitis*, and *Dyspnœa* are ably treated in separate articles by Dr C. J. B. Williams, a gentleman who is known to have devoted much attention to the pathology and diagnosis of pulmonary diseases.

In the article *Coryza*, which is short, he confines himself to an account of the phenomena, causes, and treatment of this affection, which indeed is more frequently a part of catarrh, than entitled to any separate consideration.

The name of *Catarrh*, which, after the manner of Laennec, he distinguishes into the *pituitous* and the *dry*, he after the same authority restricts to the state of the membrane in which the morbid secretion, apart from inflammation, is the obvious character. We have not leisure and no great inclination at present to inquire into the justice of this view, and therefore we let it pass with the single observation, that we doubt whether, under any circumstances, the secretion of a mucous membrane is preternaturally augmented or changed in quality without at least previous inflammation, and that what is called *pituitous catarrh* is in general a relaxed or enfeebled state of the membrane after repeated attacks of inflammation or acute catarrh. Even from this rule we conceive that what is called the hay-catarrh is not exempt, since it appears to depend on some exhalation applied to, and irritating the tracheo-bronchial membrane.

The term *dry catarrh* we have always regarded as a contradiction in terms, and in every respect improper. But as, like Dr Williams, we know not what to substitute in its place, and as we willingly admit that we have even after the explanation of Laennec, but a very confused and unsatisfactory idea of its pathological cause, we avoid saying more on the subject. In pathological principles and therapeutic rules, Dr Williams follows Laennec, and recommends, after his example, for the alleviation or removal of this disorder, the almond soap pills, the carbonated alkalies, and the sulphur baths. Dr Williams very properly recommends the *liquor potassae*, which, in doses of from ten to fifteen or twenty minims, with tincture of squill, is often followed by great benefit. We add that, in the disease which we conceive is meant by Laennec as dry catarrh, that is *dyspnœa* and cough, without much or obvious secretion, we have seen much benefit from the use of gum ammoniac and myrrh, and a combination of small doses of nitrate of potass and carbonate of soda.

The article on *Dyspnœa* may be advantageously mentioned here. To this affection, though a mere symptom, our ignorance, nevertheless, after so much pathological research, still obliges us to give a separate place; and Dr Williams has very properly placed before his readers all the causes upon which pathology shows it may depend, arranged under three general heads; 1. Derangements that interfere with the respiratory movements; 2. Derangements that obstruct the passage of air to and from the pulmonary cells; and 3. Derangements in the pulmonary tissue that obstruct the action of the air or the blood.

Of the different forms of *Dyspnœa* belonging to these several heads, Dr Williams then gives a detailed enumeration, which the reader will peruse with advantage.

In the article on *Bronchitis*, Dr Williams gives a very good account of the acute and chronic form of that disease; and while he studies to explain the pathology of these affections, he shows that he has studied carefully the best mode of treatment, and the respective effects of different remedies in this disease, which, in the chronic form, is always puzzling, and too often proves unmanageable. Among other remedies, Dr Williams recommends the tincture of the *lobelia inflata*, which is undoubtedly a powerful agent, though not always uniform in action; and this we believe to be the chief reason why it has never been very generally received in this country.

It is not improbable, that, in the exhibition of narcotic and sedative remedies, the treatment adopted by English physicians is too uniform and too much confined to opium and its preparations, to the exclusion of the other narcotics. The extracts of hemlock, henbane, and deadly nightshade, may often be advantageously substituted for opium in the treatment of bronchial and pulmonary disease; and perhaps opium should be always employed with extract of henbane, when it may be diminished in quantity, and is thereby less likely to produce the injurious effects ascribed to this powerful narcotic. This mode of substituting other narcotics for opium we are happy to see Dr Williams recommend.

Under the head of *Bronchocele*, we have from Dr Andrew Crawford an excellent history of *Goitre*, exhibiting its geographical and topographical distribution, its etiological relations, its pathology, and the method and remedies to be employed for its removal.

The etiology of this disorder has at all times been very obscure and unintelligible, notwithstanding the exclamation of the Roman satirist, which would imply that it was naturally connected with something in the physical qualities of Alpine countries. The present author, after an examination of all the facts connected with the geographical and local distribution of the disease, arrives at the conclusion, that neither drinking snow water, as was imagined by Pliny, nor hard water, as might be thought from the observations of Coindet and Manson, nor residence in wet or low districts, as was believed by Foderé, can alone give rise to this unsightly tumour, but that in all probability it arises from a concurrence of causes. He is manifestly disposed, however, to agree with Dr Clark and Dr Johnson, in the modification which the observations of these gentlemen have suggested in the hypothesis of Foderé; and to think that goitre is most frequently the offspring of a humid stagnant atmosphere, whether that be in elevated or depressed situations, where the winds are unable to remove the gaseous emanations of the surface.

The treatment of this disease is, since the discovery that iodine is the active material of the burnt sponge, comparatively simple and certain; and the rules and cautions requisite in the exhibition of this energetic agent are well delivered by the author of the article. He afterwards considers the method of Quadri, by the introduction of the seton, and the proposal of tying the nutrient arteries, and extirpating the tumour. For these we refer the reader to the work itself.

A combination of both methods, which we do not perceive to be mentioned, perhaps because it is too obvious, has, we have on the best testimony occasion to know, been very happily adopted by Dr Coindet of Geneva. In some cases of very large goitrous tumours, in which there could be little hope of ultimate cure, this physician has found that the repeated application of leeches to the tumour, combined with the use of iodine internally and externally to the greatest possible extent, has succeeded in reducing the size of the tumour to limits so moderate, that it could afterwards either be wholly removed by extirpation or the seton, or so much diminished in size by the latter method, as to cause no further inconvenience to the patient.

In the article on *Chorea*, Dr Andrew Crawford has given a learned and elaborate history, literary and medical, of the various fantastic forms which the disease assumes. Of this essay it is impossible, with justice to its merits, to give an abstract; for although it is copious and comprehensive, the information is so much concentrated that it cannot, without injury, admit of further abridgement. We have merely to say, therefore, that, from the multifarious writings, essays, and cases of this disease, the author has collected all the most useful and essential information in such a shape, as to give the reader in a short compass the results of the researches and experiments of many observers. Under the anomalous form of this disease, which indeed is altogether an anomaly, we find arranged the singular case given by Mr Kinder Wood, the leaping-ague of various parts of Scotland, and of our correspondent, Mr Crichton, Dr Watt's case of *periodical jactitation*, the cases of *rotation* by Mr Hunter, and some other varieties of similar characters.

Of the article on *Calculus*, we have only to say, that it is the work of Dr Thomas Thomson of Glasgow,—a chemist whose name is sufficient to give value to any work with which it is connected.

The article on *Calculous Diseases*, by Dr Cumin, exhibits a fair view of the recent state of knowledge in that department. But as we have at various times brought before the eyes of our readers all the important and material information from the same sources as those employed by the author, it is superfluous to tread once more the same ground.

The subject of *Catalepsy*, which is treated by Dr Joy, has been one that has given rise to much scepticism; and most of the alleged examples of it have been regarded as feigned, and have been consequently denied to be genuine. The present author, however, conceives that a sufficient number of well authenticated cases is now recorded to render its existence unquestionable.

This, however, we do not conceive to be the point at issue. Without impugning the veracity of the observers and recorders of alleged cataleptic cases, it may be readily permitted to doubt their powers of observation. It is a remarkable fact, that all the cases of alleged Catalepsy have occurred either in females, or in males of enfeebled nervous habits, whose minds were impaired, and who, in the state of their nervous system, made a near approach to females; and that scarcely a well authenticated example of alleged catalepsy terminating fatally can be adduced. On this account we have generally regarded cases of catalepsy as mere anomalous forms of *hysteria*, and totally different from apoplexy; and, in the instances in which the symptoms were pointed out as corresponding to the assemblage named cataleptic by authors, we have never seen any good reason for changing this opinion.

It is further remarkable, that although Dr Joy maintains the independent and genuine existence of catalepsy as a distinct disease, he actually, after a description of the phenomena of the fit, and an examination of its causes, expresses the same opinion

n the following terms; and details in illustration of it a very pointed example of the transition of catalepsy into hysteria.

"But in far the greater number of authentic and fully detailed cases, catalepsy has appeared to bear the strongest affinity to hysteria; and, indeed, in some of these seems to have been merely one of the innumerable forms of this Protean disorder. In support of this view we find that females and hypochondriacs are by far the most frequent subjects of both these affections; that they occur in similar constitutions, viz. those characterized by a high degree of nervous mobility; that they are convertible into each other; and, finally, that they are susceptible of relief from similar modes of treatment.

"In illustration of this opinion we shall briefly mention a case of catalepsy, which we witnessed some years since. The patient, a young woman of 18 years of age, having been cruelly treated by a man who was under promise of marriage to her, and received a slight wound in the head and some bruises in the breast, was seized with severe and repeated fits of catalepsy. These were usually preceded by headach, vertigo, and tinnitus aurium. During the continuance of the paroxysm she remained perfectly insensible to surrounding objects; the breathing was considerably affected, and the pulse rather quick and small; the pupils were dilated, the face assumed the expression of a smile; and the limbs speedily maintained any position in which they were placed. The duration of the fits was from five to ten minutes, and they recurred very frequently in the course of the day. After each attack, pain in the præcordia, headach, and a general sense of uneasiness were complained of. In the intervals the intellectual functions were usually unimpaired, though on some occasions a slight degree of stupor was observable. After the disease had existed some weeks, the fits were occasionally accompanied with screaming and struggling. She now suffered from severe lancinating pain at the epigastrium, increased by pressure, and accompanied with difficulty of respiration, pain in the small of the back and in the right lumbar region, and subsequently some difficulty in voiding the urine, and frequent constipation. The most usual appearance of the paroxysms now became that of sound sleep, and their recurrence was much more frequent. The menstrual flux was not interrupted. The fits daily assumed more and more of the hysterical form; and by the use of aperients, local and general bleeding, and counter-irritants to the spine, ceased altogether in about two months from the commencement of her illness. The transition from well-marked catalepsy into hysteria was so remarkable in this case as to leave little doubt of the close affinity, if not the identity, of the two diseases. The case of Helena Renault, recorded by Sauvages, seems to have partaken of the nature of catalepsy, hysteria, and epilepsy conjointly—all ceased on the spontaneous return of the menses."—Pp. 360, 361.

Now, after the foregoing statements, we conceive arguing the point out of the question entirely; and we think no course is left, but for the nosologist to refer catalepsy to the head of *hysteria*. It is possible that it may in the same manner appear connected with epilepsy, exactly as that disease is known to be connected with apoplexy. But the main fact of the hysteric origin of catalepsy is thus indisputably established; and it is a fact of some importance, both in a nosological and pathological, and in a therapeutic point of view.

In the latter respect, we have only to say, that Dr Joy gives some very judicious and rational instructions.

A short article on *Chlorosis*, by Dr Marshall Hall, contains some interesting observations on the productive causes, and the characteristic nature of that disorder. Dr Marshall Hall, who had much experience in observing the formation of this disease among the manufacturing population of the town of Nottingham, joins with Dr Hamilton in ascribing it, in the first instance, to the inert and torpid state of the alimentary canal. This he thinks produces that change in the constitution of the blood by which this disease is distinguished, and eventually the congestions and dropsical infiltrations in which it so frequently terminates.

Some of these congestions, which the author ascribes to *anaemia*, may be so considerable as to derange the circulation and impair the functions of the brain; and in two cases of *chlorosis* the author witnessed complete *mania*, one recovering speedily, but they required to be conveyed to a lunatic asylum, and dying in consequence of the effort.

The nature and operation of these effects may be understood from the following statements.

> "Four cases of chlorosis in which death took place suddenly have fallen within the writer's knowledge. In one of these a careful post-mortem examination was made. The patient having been confined to bed for a few days with cold, became much better, and was in good spirits: after having sat up for a quarter of an hour, and talked cheerfully, she suddenly became faint, gasped and expired. On examination, some effusion was found in the ventricles of the brain, in the pericardium, and the left cavity of the pleura, the right cavity being obliterated by adhesion; the lungs were gorged with serum; the heart was large; the liver much enlarged; the hands were of an ivory whiteness; the ancles were slightly œdematous; and there was abundance of adipose substance. The blood was pale and aqueous, and the clots formed in the large vessels were small and light coloured.
>
> "The occurrence of sudden death in some affections termed nervous, and deemed innocuous, is a fact which has not been sufficiently noticed. The writer has been informed of several such cases within the last two years. He suspects that the patients have been chlorotic and bloodless, and that the case is like that of sudden death occurring after great loss of blood."—P. 379.

The treatment is delivered with great precision and clearness, nd consists first, in relieving the alimentary canal of its unnatural load, and thereby allowing the intestinal tissues to recover heir healthy properties, and with the view of promoting this reult, giving daily two grains of Barbadoes aloes, and the same uantity of sulphate of iron,—a method which the author found o be quite specific.

For an analogous disorder occurring in infants and children, nd which he therefore proposes to designate *leucosis*, arising pparently from some similar state of the alimentary canal and he circulating fluid, and which is liable to terminate in hydrenephalus, he recommends a few grains of rhubarb, with one-fourth f a grain of the sulphate of iron, light diet and fresh air.

A third form of the disease, occurring in married females, and lenominated by Dr Gooch *acute chlorosis*, he represents to rise either from defective assimilation and hematosis, or from lirect loss of blood. The aloetic chalybeate is in this form reresented to be equally remedial.

The subjects of *Cholera*, *Contagion*, *Disinfection*, and *Dyentery*, by Dr Brown of Sunderland, are treated with great udgment and talent.

In treating of cholera, Dr Brown gives a sketch not only of he original appearance and subsequent progress of the Indian pidemic of 1817, but a general account of its progress and ravages in Sunderland and the neighbouring villages. From the facts afforded both in India, in Russia, and in this country, he gives an accurate history of the phenomena of the disease, a good account of the morbid appearances, considers the questions of epidemic influence and contagious propagation, and finally lays down the method of treatment.

It is manifest that he has bestowed great attention and much inquiry on the question of contagion; and he appears to vacillate between the facts adduced by the contagionists and observed by himself, on the one hand, and those adduced by the Indian practitioners, many of the continental physicians, and various facts subsequently observed in this country on the opposite side. He finally decides, after a good deal of hesitation in favour of a contagious property, though of a very feeble character, from the following considerations.

"1. Members of that class of society which has manifested the strongest predisposition to the disease have been very long exposed to the emanations from the sick, under circumstances the most favourable to the propagation of the disease, without being infected.

"2. No death, and scarcely an attack of serious indisposition, has occurred among the medical men, though they have spent hours in the patients' chambers, assisting in frictions and other offices usually performed by nurses, and from the fatigue they were undergoing might be supposed to be peculiarly obnoxious to contagion.

"3. Medical practitioners have not in any ascertained case conveyed the infection in their clothes to patients whom they were attending for other diseases, or to their families. Certain of them have mingled unreservedly with their own families after long attendance on cholera patients, without any indisposition, however slight, occurring in consequence. It is proper, however, to remark that two cases have occurred, one of them a fatal one, which might be attributed to the intercourse of medical men with their families.

"4. When the disease has appeared in a private family in a situation in life above the labouring class, it has been confined, so far as the writer's knowledge extends, and he is of opinion that he is acquainted with the circumstances of all the cases of the kind which have occurred, to the individual first attacked, and has not in any instance spread to the other members of the family; nor have in these instances nurses or other casual attendants on the sick suffered, though belonging to a class more obnoxious to the disease.

"5. The *agricultural* villages in the immediate neighbourhood of Sunderland, which had throughout the whole progress of the epidemic the most unreserved intercourse with us, remained and still remain exempt from the disease. The populous village of Deptford, situated near the river, at the distance of half a mile from Ayre's Quay, where the disease was very prevalent and fatal, and having the most constant communication with it, partakes of this exemption. The town of South Shields, containing nearly 14,000 inhabitants, and distant from Sunderland but seven miles, remained exempt from the disease (with the exception of two cases, stated to be very slight, and not traceable to any communication with this place,) during the whole of its epidemic prevalence here, though calculations have shown that eleven hundred persons pass weekly betwen the two places."

"6. Though the disease has appeared, in certain cases, to be transferred to previously uninfected districts by spreading from persons who had sickened there after arriving from places where the disease prevailed, yet facts have occurred which tend to show that the sickening of such persons and the diffusion of the disease have, at least in some instances, been mere coincidences.

"7. On the first appearance of the epidemic in certain places, several have been simultaneously attacked; at Earsden Colliery, for example, thirty-two. On its first breaking out here, it manifested itself in three distinct points, between which no communication could be discovered; and the attacks in two of these points were simultaneous. It could not be traced from any source of infection to the individuals first attacked. In many instances, likewise, instead of residents in the same house being successively attacked, its invasion of several has been simultaneous.

"8. There were feelings experienced by various persons, either otherwise in perfect health, or labouring under complaints distinct from the epidemic during its prevalence here, such as spasms, hrilling sensations of the extremities, and various affections of the ervous system, which appeared to betoken the influence of some ause more generally diffused than contagion; since many persons hus affected had not been exposed to any source of infection."—P. 400.

On the strength of this evidence, we conceive Dr Brown night have quite as well concluded that the contagious property vas inert and null, as that it was feeble. It is not our custom, howver, to prescribe the faith of any man; and we sincerely recomnend the serious perusal of Dr Brown's article to all persons who till believe in the contagious properties of the disease.

The subjects of *Contagion* and *Disinfection* may be associated. The author distinguishes contagious diseases into two orders,—those which require for their production positive contact beween the individuals communicating and those imbibing the lisease, or the application of the contagious principle in material and visible form; and though communicable by contact, nd in some instances by inoculation, are further capable of transmission from one person to another through the medium of the atmosphere.

To the first head he refers syphilis, gonorrhœa, sivvens, yaws, itch, scalled head, Egyptian ophthalmia, cow-pox, and with less confidence, pellagra and the *mentagra* of the ancients. Under the latter he ranges small-pox, chicken-pox, measles, scarlet fever, hooping-cough, plague, typhous fever, hospital gangrene, and, we are rather surprized to see, influenza and puerperal fever. To the same list he adds yellow fever and Indian cholera, only according to the opinion of some,—from which we must infer that he is doubtful about the former.

It is unnecessary to follow Dr Brown through his short but condensed and instructive enumeration of the circumstances which favour or resist the operation of contagious principles; and we shall merely subjoin the following account of the characters by which contagious maladies may in general be distinguished from those which are void of contagion.

"1. Contagious diseases frequently spread in places previously healthy, shortly after the arrival in them of persons from infected districts. The same remark applies to fomites. It is the more apt to occur in the case of persons, if they be sick on their arrival or become so shortly after.

"2. When a case arises in a limited district, the disease spreads gradually through it as from a centre towards a circumference, but more rapidly, *cæteris paribus*, in proportion to the density of the population, and the intercourse of the healthy with the sick.

"3. Persons whose official duties bring them into habitual and close communication with the sick, such as the medical officers and other attendants on public institutions which contain many cases of a disease, are affected with it in a greater proportion than other members of the community similarly circumstanced with themselves, the intercourse with the sick excepted. The number infected from among the different classes of such attendants bears a proportion to the closeness and duration of their communication with the sick; for instance, the nurses, and in military hospitals the orderlies, are more frequently attacked than the medical officers.

"4. The contagious quality of a disease may be inferred from frequent instances of the success of measures taken to prevent its propagation, such as the early removal of the sick. The importance of the evidence to be derived from this source cannot be more clearly shown than by the following statement of Dr Alison: 'We should have little difficulty in pointing out above a hundred houses where a single case of fever has occurred, where the patient has speedily been removed and the place cleaned, and where there has been no recurrence. But we should hardly find five houses in all the closes of the old town of Edinburgh, in which a patient in fever has lain during the whole or even during the half of his disease in which other cases of the disease have not shown themselves.'

"5. Those who seclude themselves from all communication with the sick and with those who visit them, and receive no commodities which have been in their possession or near them, escape the disease; whilst persons similarly circumstanced in all respects, the seclusion excepted, are attacked by it. The same rule applies to countries or districts secluded by quarantine or other regulations from neighbouring countries, similar in soil and climate, where disease is prevailing; though it must be acknowledged that the cases are rare in which a precise conclusion can be drawn from this latter case of exemption.

"6. An inference favourable to the supposition of a disease being contagious, may be deduced from the circumstance of there being nothing in the soil or climate where it prevails fitted to engender other causes of disease, such as malaria. A similar inference may be drawn, when disease is prevailing in a limited district, from the cleanliness observed there, and the consequent exemption from infection which might be occasioned by the effluvia from decomposing animal and vegetable recrements. The previous state of health, too, of the district or country, particularly as regards the disease which is the subject of investigation and diseases of the same kind, may furnish the medical reasoner with powerful arguments."—Pp. 459, 460.

Our limits do not permit us to enter into the consideration of the validity and applicability of these tests. But we must observe with regard to the first and fifth test, that neither of them admit of application with confidence to demonstrate the contagious character of a disease. We do not think that the case of the Island of Ascension, which the author adduces in illustration of this test, is by any means conclusive; and we think we can perceive in Dr Brown's own observations an admission of its incompetency. The grand reason why the Island of Ascension became in May 1823 the theatre of yellow fever, was not that the disease was imported, but that the Island posessed subjects on which the causes of sickliness could operate. It was physically impossible that an island on which no human being lived till the year 1816 could be affected with yellow fever, which requires the presence of human beings in order to display its virulence. And as to the dry rocky volcanic nature of the soil, how many dry rocky islands in the Mediterranean and the West Indies does not every one know, on which yellow fever has been known to appear in the most malignant form?

As to the fifth rule regarding seclusion, we have merely to observe, that even seclusion is not always a preventive of our own *typhus* or *synochus*; and every one who is familiar with the febrile epidemics of large and populous cities, must have observed examples of fever affecting persons who sedulously secluded themselves from the sick. We mention this, not with the view of nullifying the doctrine of the contagiousness of fever, which it does not, but merely to show that the test specified in this paragraph would require modification.

Of the article on *Disinfection*, we have only to say, that it embraces in a convenient compass every thing of theoretical importance and of practical necessity which the physician requires to know. The author gives a full view of all the means employed for disinfection from Guyton Morveau to Dr Henry; but does not attempt to appreciate their respective merits. With great good sense, however, he impresses the indispensable importance of ventilation by fresh air and cleanliness, without which, he properly remarks, all chemical means are unavailing.

In the article on *Dysentery*, Dr Brown gives a very good account of the different varieties of that disorder, partly from personal observation, partly from Sir George Ballingall and other competent authorities.

Of the article *Climate*, when we say that it is written by Dr Clark, and that it forms an abridged view of the work of that intelligent physician on the same subject, we are satisfied that we say that the present work contains on that subject the best information and the most judicious advice extant.

An account of the physical, physiological, and therapeutic effects of cold, by Dr Whiting, supplies an important chasm in the medical writings of the present day, by collecting in a small space whatever may tend to illustrate the operation of this powerful agent.

In the articles *Colic* and *Painters' Colic*, by the same

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ncy, or the opposite state, great emaciation, and for their inc
te use of spirituous liquors.
“ Of the circumstances which distinguish spontaneous from
ary combustion, the following seem most deserving of notice
“ 1. The combustion spreads with extraordinary rapidity; t
composition of the entire body being usually effected in an e
mely short period of time.
“ 2. The flame is of a lambent and flickering nature, of a blu
our, very difficult to extinguish by water, and not readily com
nicable to inflammable bodies placed in its vicinity.
“ 3. A strong empyreumatic odour is usually exhaled, and
re is found upon adjacent objects a fetid and moist fuliginous
osit, of a greasy nature.
“ 4. The trunk is generally entirely consumed, but portions of
head and extremities are occasionally left uninjured.”—P. 451

n proceeding to consider the merits of the theories advanced
xplain this process, Dr Apjohn directs the attention of the
ler to the nature and essence of combustion, as a process
isting of the chemical combination of elementary substances
evolution of heat and light, and requiring the presence of
gen on the one hand, and carbon, or hydrogen, or some of
compounds, on the other. He then, after laying down
conditions,—1st, that the combustible be in contact with
gen, and, 2d, that its temperature be considerably raised,—
s at once that, as the human body is a combustible compound,
is constantly surrounded by an elastic medium of which
is pure oxygen gas, one of the conditions is here fulfilled;
since experience shows that if the temperature be suffici-
elevated, the materials of the body may be kindled, he
es that the only point for consideration is,—what are the
mstances in which such an accident takes place.
his, however, is by no means an easy subject of investiga

It is certain that, in ordinary circumstances of health
uman body does *not* take fire spontaneously; and even th
cation of heat produces merely local mischief, and does n
mine the incandescence of the body at large. He first co
the hypothesis of alcoholic impregnation, as generally ent
l, but dismisses it as inadequate to produce the effect.
adverts to the theory advanced by Dr Marc, who beli
ombustion is owing to the kindling of inflammable g
ped in the system. Admitting the facts of the spon
rmination of inflammable gases, which are indeed esta
is is nevertheless inadequate to explain the rapidity
stion, and the perfection with which the body is r
es. A taper or candle applied to carburetted hy
ssuing from a human body, inflames the gas onl
of contact, and does not kindle the dead subject.

Independently, however, of this difficulty, another is presented in the question regarding the means by which the body, admitting its combustibility, is first kindled. In order to explain this, Dr Apjohn justly observes, that in most of the recorded cases some ignited body, as a candle, lamp, fire, or lighted pipe, was found in the immediate vicinity of those who had suffered; and hence he adds, Vicq-d'Azyr was among others led to infer that the combustion was originally caused by an external agent,—an opinion in which he has been followed by Lair, Breschet, Dupuytren, and others. Should this opinion prove to be well founded, though the subsequent combustion may still be denominated spontaneous, the primary kindling must be regarded as originating from the application of material fire or a burning agent.

Others, nevertheless, doubting whether in every case the presence of an actual burning material could be established, have attributed the accident to the electric spark; and, doubtless, under some circumstances, this may be simply within the limits of possibility. It is, however, idle in the present state of the facts, to admit these speculations, which at best are pieces of fancy. Dr Apjohn thinks that the old hypothesis of Morelli and Fanzago, of the presence of phosphuretted hydrogen as a spontaneously inflammable gas, is by far the most likely to account for the occurrence.

We shall conclude with the following general deductions by Dr Apjohn.

"From the preceding facts and arguments the following conclusions may be deduced:—1. The human body admits of being reduced to a highly inflammable state. 2. This condition is chiefly owing to the developement, by perverted secretion or incipient putrefaction, of gases constituting a more or less explosive mixture, but is probably often promoted by the dispersion throughout the system of alcoholic vapours. 3. In most instances of human combustion the process has commenced in consequence of the contact with the body of external fire, or of an electric spark. 4. Cases truly spontaneous, if any such have occurred, must be referred to the disengagement of phosphuretted hydrogen, or to the caloric developed by those internal actions which determine a highly combustible state of the body."—P. 354.

The observations on *Infantile Convulsions* and *Puerperal Convulsions* by Dr Lococke, will be perused with interest. In neither of the papers is there any attempt at speculation or theory; but the circumstances attending convulsions, and distinguishing the different causes with which they are connected, are stated in a manner sufficiently clear and practical to guide the practitioner in the choice of his remedies.

Under the former head, Dr Lococke very properly studies to prove the fallacy and partial admissibility of the doctrine which ascribes the occurrence of convulsions invariably to congestion, or vascular fulness of the nervous system, and shows that they are often connected with those symptoms which indicate inanition of that system, and anæmia. Dr Lococke would, however, have rendered his doctrines on this subject more general and more mutually consistent, if he had adverted to the fact established by the researches of Dr Kellie, that even immense losses of blood and other evacuations are followed by local congestion. It is indeed a remarkable fact, that, from the very emptying of the vascular system, the blood ceases to flow easily, or flows more slowly, or even may stagnate entirely in the vessels of the brain; and it is in this manner, we conceive, that convulsions and other affections of the muscular and sensitive systems are caused by great evacuations, and on this ground, that their employment is contraindicated in such forms of the disease.

The observations of the present author, which are highly judicious, on the treatment of these disorders, will be very useful in checking the prevalence of a mode of treatment certainly too exclusive and uniform, and appropriating the remedial measures with more discrimination to the causes of the disease.

The essay on *Croup* by Dr Cheyne, presents a short abstract of the researches of that zealous and judicious physician, with such illustrations as the recent experience of foreign practitioners have enabled him to add. No single individual, we believe, has done more to illustrate the pathology, and give efficiency to the treatment, of this disease than the present author; and no one is better qualified by his personal knowledge of the subject to do it justice. The essay, though short, is in all respects extremely judicious and instructive.

Delirium by Dr Prichard, and *Delirium Tremens* by Dr Carter, though by different authors, may be considered together. Dr Prichard distinguishes delirium into two kinds, *sympathetic* and *idiopathic*. The former is the delirium of fever, the delirium accompanying the constitutional disorder of great wounds and injuries, or painful and extensive operations,—the delirium after great loss of blood, and at the close of life, in various diseases of exhaustion, as consumption, marasmus, &c. Idiopathic delirium he makes to consist of, *a*. delirium consequent on injuries of the head, concussion, &c. and lesions producing inflammation; *b*. the delirium of meningeal or cerebral inflammation; *c*. the delirium of intoxication or narcotism; *d*. the delirium accompanying rose of the head and face; and *e*. the delirium of continued fever, when the head is the seat of intense morbid action, as in cephalic fever.

In the treatment, which is very skilfully adapted to the different forms of the disease, Dr Prichard recommends, in that combined with stupor, whether occurring in the course of fevers or in ordinary affections of the head, incision of the scalp, made in the direction of the sagittal suture, as most beneficial. "The effect of this remedy is often an immediate relief, by the bleeding which takes place; the subsequent inflammation and suppuration, the incision being kept open, are much more productive of benefit than the ordinary superficial inflammation excited by blisters, or the serous discharge from the surface of the *cutis*." The remedy is certainly most effectual; and in all probability, if more frequently tried, cases of delirium and derangement would be less unmanageable, and more frequently cured.

Of *Delirium tremens*, or brain fever, the *oinomania* of Hufeland and some continental authors, a very accurate and faithful account is given by Dr Carter,—a circumstance so much the more important, as there is scarcely in any systematic work a good account of this singular and insidious complaint; and the practitioner is often obliged to collect his ideas of the complaint by shreds and patches from the writings of half a score of monographers. The present author follows in general the distinctions established by Dr Blake, who remarked three different stages, one of symptoms of debility, indisposition, and mental irritability; the second of inordinate excitement and disproportionate anxiety, with spectral delirium; and the third, tremulousness of the muscles, general disorder of all the secretions, and symptoms of great cerebral irritation, or even oppression.

On the subject of pathology, Dr Carter candidly avows that we are quite in the dark; and that all that we conjecture of the probable state of the brain from the symptoms, is merely sufficient to enable us to conduct the treatment. This is a great deal; and perhaps we should have no reason to complain of pathology, if we knew as much of other diseases. But the truth is, that, though in some cases which are subjected to treatment, recovery seems to be the consequence of the remedial measures, in others it is evidently spontaneous, and in others no recovery takes place at all, notwithstanding the employment of all the means recommended; and the patient either dies comatose or convulsed, or becomes decidedly maniacal. In short, the treatment of *Delirium tremens* is very much empirical. Where it is beneficial, it seems more in consequence of its obviating individual symptoms, than from its influence on the general course of the disease.

The present author, in imitation of Dr Blake, modifies the remedies according to the stage of the disease. In the first stage, he withdraws the *stimuli*, and exhibits opium in large doses, as originally recommended by Pearson, Sutton, and Armstrong. We recommend, however, the perusal of the article, as containing many good practical rules, and none more important than those which relate to the moral management.

Of the article on *Dentition*, we have only to say that the phenomena of that process, and its occasional effects, are well described by Dr Joy.

Counter-irritation and derivation have each an article; the first by Dr Williams, the second by Dr Stokes. We acknowledge our inability to distinguish the two objects, unless in name, or a different mode of expressing the same thing.

In the first article, which is more strictly physiological and therapeutic, Dr Williams gives a succinct view of the different means of counter-irritation furnished by rubefacients, vesicants, pustulating irritants; setons, issues, and perpetual blisters; and lastly, cauterizing counter-irritants. In the course of this summary he considers the most effectual means of preparing and applying sinapisms, in which he mentions the experiments of Trousseau and Le Blanc, the best mode of obtaining the vesicating effect of cantharides, as demonstrated by the researches of Robiquet, with the treatment during the operation of vesication, the *vesicatoires volans* of the French, the employment of the tartar-emetic ointment and its effects; and lastly, the actual cautery, moxa, and the vapour of boiling water.

It is only what might be expected, that in this paper are mentioned every important fact and principle adduced in the subsequent one of Dr Stokes; and how two papers on subjects so much the same, indeed so identical, should be published in the same work, is a circumstance the reason of which we cannot comprehend.

The essay of Dr Stokes is, nevertheless, not superfluous. It refers more strictly to the therapeutic effects of counter-irritant remedies in curing certain diseases otherwise unmanageable; and the author illustrates the general principles by the introduction of various pointed cases.

In the learned and elaborate essay on Diabetes, by Dr James L. Bardsley, the reader will find the fullest, the clearest, and the best account of that disease extant. Of this paper it would be injustice to attempt any abstract. We recommend, and we know we shall not recommend in vain, the perusal of every line of it, which indeed is replete with accurate information and sound reasoning. We merely subjoin the following general conclusions, drawn by the learned author regarding its nature and treatment.

"1st. That no satisfactory explanation of the real nature of diabetes has, as yet, been presented to the profession; hence, its proximate cause is still involved in obscurity. 2d. That it is probable that in most instances the stomach is primarily deranged, and that the kidneys are rendered morbidly active by the percolation of saccharine matter. 3d. That the employment of an exclusively animal diet proves chiefly useful by cutting off the supply of those materials which lead to the formation of sugar; and thus, if persevered in for a time, a favourable change mostly occurs in the assimilation. 4th. That the *animal regimen, opium, diaphoretics,* and the *warm bath,* constitute the most effectual means of arresting the progress of the diabetic symptoms, and of effectually removing the complaint; and that cupping and blistering the region of the kidneys, venesection in recent cases of an acute character, lime-water, or nitric acid for common drink, prove useful auxiliaries to the preceding remedies. 5th. That no individual remedy or method of treatment is applicable to every case of the disease: for in some instances an entire abstinence from vegetable food is highly useful; whilst in others, venesection, opium, or diaphoretics are found most beneficial. 6th. In commencing with any plan of treatment in this disease, it is proper to ascertain the quantity of solids and liquids daily taken, in order to be enabled to institute a comparison with the urine and its contents afterwards. A chemical examination of that secretion ought never to be omitted before the trial of any remedial measures, and during the progress of the complaint; as it enables the practitioner to determine with accuracy one most important point, namely, the quantity of saccharine matter it contains, and to ascertain the gradual advances towards recovery. The urine may assume nearly a natural colour, and lose all its diabetic properties to the taste and smell, when, on being evaporated, its residuum is found to afford a saccharine impregnation, showing that the disease is not completely subdued."—Pp. 549, 550.

Of *Diarrhœa,* a very judicious account is given by Dr John Crampton and Dr Forbes. The disease is distinguished in the usual mode into feculent, bilious, mucous, serous, and tubular; and as this does not include those forms of the disease in which it depends on some organic change of the intestinal mucous membrane, the head of *chronic diarrhœa* is added.

Some judicious observations on the pathology of the different kinds of diarrhœa are given; and the account of the treatment, which shows great judgment in the selection and adaptation of remedies, we recommend particularly to all those who are in the habit of opposing this disease invariably and exclusively by one set of remedies only. There is no disease almost which is treated more frequently on empirical principles by astringents; and none which requires more caution and discrimination in the use of these agents.

The article on *Dietetics* by Dr Paris is learned, instructive, and interesting, and exhibits to great advantage the powers of that writer in investing a scientific subject with popular interest. It is too long for abridgement, so clear that we must not attempt to injure it by any imperfect analysis, and so important that we must recommend our readers to peruse it as it stands. The dietetic instructions in the latter half of the essay, we recommend to the particular attention of dyspeptics and persons of sedentary habits in general, and invalids in particular. We would, indeed, recommend this essay to be published apart and circulated among the feeding animals of the middling and higher classes, to whom it would do infinite good, were we not aware that it would also be the source of infinite harm to the doctors.

A general essay on the *Nature and Causes of Disease*, by Dr Conolly, is written with a degree of confidence and decision, but at the same time in a manner so extremely interesting, that it cannot fail to be read with avidity and attention. Too short, perhaps, for its general object, and embracing too extensive a field, we should fear that after all, it exhibits only a partial view of the important subject which the author proposes to develope. The general train of thought is nevertheless just; and the author shows, what is most wanted in treating a subject of this kind, a mind of sufficient boldness and originality to resist the temptation of adopting the opinions of others, merely because they happen to be fashionable, and not to sacrifice well-ascertained principles, at the shrine of novelty.

In considering the merits of different theories of disease, the author justly observes, that those who have maintained the sovereign influence of the nervous system, have given this agent an influence so unbounded, as to enable its partisans to avail themselves of all the advantages to be derived from bold and unrestrained conjecture. Admitting, nevertheless, the great part performed by the vascular system in all diseases, and its exclusive operation in the commencement of many, he rejects as insufficient to account for all the phenomena and effects of morbid action, the theory of Dr Parry, who, it is well known, ascribed every thing unsound in the human frame to morbid or preternatural determination.

We must not, however, attempt either to garble this ingenious article, or to comment on the views of the intelligent author; but recommend it to the deliberate study of the philosophic physician. The subject is again resumed in the second volume, under the head of the *Practical Principles of Medicine*.

In the Essay on *Dropsy* by Dr Darwall, we find an elaborate and faithful exposition of the best ascertained doctrines on the causes of the disease, and the best mode of treatment. Dr Darwall considers attentively the different varieties of dropsy, according as they are connected with disease of the heart, lungs,

liver, spleen and pancreas, and kidneys; and their appropriate remedial measures. But as we have on various occasions, in adverting to the different treatises published on the subject, gone over this ground already, we must merely say, that the present essay exhibits an excellent and judicious abstract of the whole, methodized and animated by the mature experience of the author.

Of the Essay on *Physical Education*, when we say that it is by Dr Barlow, we convey an assurance that the subject is treated with ability.

Several articles on Materia Medica, as Cathartics, Diaphoretics, and Diuretics, are very well written by D. A. T. Thomson.

Of the articles on cutaneous diseases, those by Dr Tweedy J. Todd, are by far the most learned, not only of that class but of the whole work. It is gratifying to perceive a physician of the learning and talent of Dr Todd thus causing the light of ancient literature to shed its classical lustre on the medical science of modern times, and studying to excite not only the interest of the physician, but the curiosity of the scholar, in showing how accurate were the observations, and how faithful the descriptions of the physicians of antiquity.

The *Ecxema* and *Arabian Leprosy* are well described by Dr Joy of Dublin; and the Greek *Elephantiasis*, or Barbadoes leg, —the disease anciently described by Lucretius as endemial in Egypt, and in modern times in Ceylon, Cochin, and many parts of the West Indies, by our friend Dr John Scott.

We have thus taken a rapid, and perhaps a hasty survey of the contents of the first volume af the Cyclopædia of Practical Medicine; and we feel that we must defer till our next number the examination of the second volume. From the one now submitted to scrutiny, however, we may safely say, that, on the whole, the work is very ably arranged and digested. Imperfections and blemishes doubtless it presents; and some of them we have ventured to specify; others we have overlooked as immaterial. The main defect of the work is some degree of inequality in the materials, an occasional want of consistency or keeping in the articles, and some slight interference or repetition of the same principles, and even the same facts. One rather prominent example of this, we have specified in the case of the articles on Counter-irritation and Derivation.

After mentioning these defects, however, we must say, that they are very trivial and unimportant, compared with the general and uniform merits of the work. And we must further add, that they are the necessary results of the arrangements by which each article is allotted to the individual, who is believed to have studied it most profoundly. The blemishes are indeed the effect of its merits. In this case we are willing to adopt the Horatian maxim;—*non paucis offendar maculis*; and to look to the general character of the work, and the combined effect of the integrant essays of which it consists. Contemplated in this light, we hesitate not to say, that the Cyclopædia of Practical Medicine is extremely valuable, in presenting a body of medical knowledge of a very superior order, and which may be regarded as the type of the medical information of the first quarter of the 19th century.

One circumstance must be forcibly impressed on every one by the character of the present work. Though among its contributors, there are only six Fellows of the College of Physicians of London, and not more than one-half of the whole, who are resident physicians in London, all the others being physicians in Dublin or in provincial towns, yet it may be safely asserted, that a more accurate and instructive collection of professional information could not be produced by any equal number of physicians in any other country in Europe. To comparisons we are in general averse; but we must say, that it is by an immeasurable distance superior to the *Dictionnaire des Sciences Medicales*, in selection, concentration, and precision, and all those qualities which render a didactic work either for reference or any other purpose, valuable. If the Cyclopædia is not superior to the *Dictionnaire de Medecine*, it is certainly not inferior to it; and unless in the more extensive field which the latter work embraces, we should say certainly that it is superior. In many of the individual articles the Cyclopædia has decidedly the superiority; and all the dissertations on the pathology and treatment of diseases in general in the English work, possess a more practical character, and bear the impression of being written by authors who have derived their information, not through the spectacles of books only, but from the personal and actual use of their own senses.

One advantage which a work of this nature possesses over every other, deserves at present particular mention. There are many subjects neither wholly pathological, nosological, nor therapeutic, but partaking of all three, and sometimes economical or medico-legal, on which, nevertheless, it is of the utmost importance for the physician, in certain situations and spheres, to have some information, and in many instances very accurate knowledge. Of this kind are contagion and infection, disinfection, dietetics, physical education, and medical electricity, all treated in the volume before us. None of these articles could, without violation of method, be thrust into a systematic treatise on the practice of physic. In the present, however, they are easily disposed of, and are ready for the perusal and study of every one who feels that he wishes to obtain information. We are on this account disposed to regard the present work as one of infinite use to the advanced student and the provincial practitioner; and it must be a source of security for the latter to feel, that he can at once refer to a treatise of this kind in any emergency or conjuncture, when his opinion is requested on a complex and obscure professional question of importance. We have no doubt that its value, in this respect, will very soon be generally recognized.

ART. II.—*History of the Glasgow Royal Infirmary from its commencement in* 1787 *to the present time, with an Appendix containing the Charter and Laws of the Institution, the Tables of Diet, &c.* By MOSES STEVEN BUCHANAN, M. D. Quarto. Pp. 88.—Published in aid of the Funds of the Infirmary.

THE alleged object of Dr Buchanan in this elaborate work is "to exhibit a condensed view of what has been transacted in this great medical and surgical store-house during nearly half a century,—to analyze the means by which so much good to the species has been achieved, and to attempt to establish a substratum of facts, which may serve as a foundation whereon some more skilful architect may rear a statistical fabric worthy of such an institution and such a city."—Preface, page vii.

In the execution of this undertaking, Dr Buchanan has concentrated a large store of statistical information, and his tables may in general serve as models for the imitation of the historians of public hospitals. The labour devoted to the compiling of some of these tables must have been immense. An obvious advantage will, we hope, result from the publication of the present work,—namely, a great improvement in the arrangement, and, we may add, in the preservation of the records of the establishment, which has found so zealous and indefatigable an historian. The labours of Dr Buchanan will, it is confidently expected, eventually contribute, by his example, to remove a reproach which has been cast upon the silence which has been observed in regard to many of the charitable institutions of the united kingdom; for it is not a little remarkable that, in a country where benevolence so extensively prevails, the manner in which charitable establishments are conducted is comparatively but little understood, and that, while considerable sums of money are annually given for their maintenance and support, the various purposes upon which those sums are expended are but seldom accurately known, or inquired into.

The foundation stone of the Glasgow Royal Infirmary was laid on the 18th May 1792, and on the 8th December 1794, the institution was opened for the reception of patients.

Dr Buchanan thus describes the building:—

"On alighting at the main approach, you enter a large vestibule surrounded with seats, where, after the hour of visit, the sick poor receive advice gratis from the physicians and surgeons of the establishment, and where those patients who have lines of admission from subscribers, must wait an examination by the above-mentioned office-bearers, before being sent to their respective wards. On each side, and a little in advance of the vestibule, are two short passages, which conduct to the medical wards, Nos. 1st and 2d; that on the right being appropriated for males, and that on the left for females; and each capable of accommodating, with the three attached side rooms, 19 patients. The height of these, as well as the other wards, which are all on the same construction, is upon an average about 12 feet, and by consulting the ground plan prefixed to Chapter IV. the length and breadth of every the most minute part of the Hospital may thus easily be ascertained. Immediately above the main vestibule, and on the second floor, is a large and elegant room for the meetings of the Directors, and the consultations of the Medical Officers,—the walls of which are decorated not with the grotesque faces, staring out of canvass, of the quondam office-bearers; but with the far more honourable and imperishable names of those great benefactors of the Institution, to whom may be applied the adage of the Divine Founder of our religion, so frequently copied into the interesting annual Reports of this establishment: 'For as much as ye have done it unto the least of these my brethren, ye have done it unto me.'

"Corresponding to the consultation room, on the third floor, is a large and elegant surgery, where all the instruments, bandages, fracture apparatus, &c. &c. are ranged; and attached to the east compartment of which, is the sleeping apartment of the house surgeon. Surmounting the whole, and situated in the centre of the building, is the operation room, the dome of which is well seen in Plate II. of this work. It has one main entrance from the central stair of the Hospital, and one on each side from the surgical wards No. 7 and 8. The centre area is about 42 feet in circumference, and rising in a circular form all around this surgical, and clinical arena, may be remarked five ranges of high-backed steep benches, for the accommodation of at least 200 individuals. The whole of this splendid and commodious operating theatre is crowned by the large central dome formerly alluded to, whose vertical lattices, descending to a considerable depth, thus throw the light to great advantage on the table of the operator. This beautiful termination to the edifice, which rises to the height of above 35 feet above the floor of the operation room, is supported on twelve chaste pillars of the Ionic order, and by this means, as in the construction of all the other parts of the building, convenience, simplicity, and elegance, are seen mutually to harmonize and assist each other. The central division of the Hospital, which extends northwards, and which is well seen in Plate III. prefixed to Chapter III. was commenced in the year 1814, and finished during 1815, and without injury to the original plan of the building, has added much to the accommodation of the publc. It contains on the ground floor an excellent dining room for the matron, apothecary, and clerks, with sleeping apartments for the female servants. The four floors above consist, as may be remarked in the ground plan, of double wards, which can with ease accommodate as least 80 additional patients. To each of these wards are attached, as in the front part of the Hospital, a nurse's-room, water-closet, and small corridore and staircase which communicates with the kitchen, apothecary's shop, dead-room, &c. &c. situated on the ground floor of the front building."—Pp. 7, 8.

A fever Hospital was commenced in 1825, and finished in 1832, which is capable of accommodating 220 patients.

The first annual report of the Infirmary was printed in the year 1796, and every successive year since that date a report has been published, from which our author has computed his tables of medical and surgical diseases. These important documents contain in compliance with the terms of the charter, a state of the sick or diseased poor taken into the hospital during each successive year, and an account of the proceedings of the directors in the execution of their office, together with a full and distinct state of the capital stock of the corporation, in lands, money, or other effects. After exhibiting a list of the directors and office-bearers for the preceding year, the report commonly proceeds to congratulate the benefactors and friends of the institution on the success of their humane endeavours in behalf of their poor and afflicted fellow-creatures. Then follows an account of the proceedings of the Directors, and a list of the Directors elected for the succeeding year. Next follows lists of diseases treated, and of operations performed, and an abstract of patients admitted and dismissed during the year. Subjoined is an abstract of the receipts and expenditure during the year, and a general state of the funds. The report concludes with an alphabetical list of the contributors and annual subscribers.

These reports are well calculated to exhibit to the public, and especially to subscribers, who receive each a copy of the report, a brief view of the benefits which result to society from the institution, and an account of the expenditure of the funds entrusted to the care of the managers. We would most earnestly recommend the invariable adoption of a similar plan by the directors of all public hospitals. The measure seems to be not only expedient, but an act of justice in all establishments which depend upon the annual aid of the benevolent. Persons who contribute to the funds of charitable institutions commonly wish to know how the general mass of the contributions have been expended, and for this purpose an annual balance sheet is obviously indispensable. The Glasgow Infirmary owes much of the liberal patronage it has received from the public, to the frequency and regularity of these reports.

> " Among the many splendid benefactions, legacies, gifts, and subscriptions, which, from the commencement of this Institution, have been annually recorded in its Reports, there is one so remarkable, and at the same time so praiseworthy, mentioned by the able and graphic Convener for the year 1824, that I cannot do better than give the narrative in his own words: ' William Smith, Inkle-weaver in Glasgow, has been a subscriber to the Infirmary since the year 1789. He was regularly in the practice of waiting on one of the Managers, on the first day of each year, and giving a guinea as his annual subscription. He as regularly waited on the same gentleman for his copy of the Infirmary Report, which seemed to more than compensate him for his subscription. He has sometimes been asked whether he was not perhaps giving more than he could afford: ' No,' he replied, ' I can save a little, and my saving cannot be better bestowed.' He died in December 1823, and by a deed executed by him and his wife, they bequeathed to this Infirmary L. 50. ' They rest from their labours, and their works do follow them.' " P. 14.

From the commencement of the institution till about the year 1807, no salaries were allowed to the physicians or to the surgeons; but in this year the Directors appointed a salary of L. 30 per annum, to be paid to each of the attending physicians and L. 10 to each of the surgeons, with this proviso, that no physician or surgeon shall be entitled to his salary till he has attended two years *gratis* in the Infirmary. In 1810 the salary of a physician was advanced to L. 50 per annum, and that of a surgeon to L. 20.

All contributions of L. 10 or more, and all annual subscribers of L. 1. 1s. or more, are entitled to recommend one patient annually for every L. 10 of contribution, and one for every L. 1, 1s. of annual subscription. In corporations and societies from which regular and perpetual recommendation may be expected, and who have contributed L. 50 to the institution, or subscribe L. 3, 3s. annually, may send two patients annually to the house, and one patient more for every L. 25 of additional contribution, or L. 1, 11s. 6d. of annual subscription. Persons meeting with accidents may, if immediate application be made, be admitted without a subscriber's recommendation.

"It having been long matter of regret, that the Reports of the Infirmary had not been rendered so valuable as they might be, to the purposes and improvement of the Glasgow Medical School, it was resolved in 1826, by the Directors of this Hospital, that in future, besides the usual annual record regarding the income and expenditure of the charity, another should be prepared, strictly professional, or devoted solely to the medical and surgical details of the Hospital. In accordance with this plan, the following resolutions were adopted by the Directors:

"1st, That, for obvious reasons, it becomes highly desirable, that as much light as possible be thrown on the nature, localities, usual progress, and termination of the diseases received into the Infirmary, from Glasgow and the wide district around, so that materials be annually furnished for a medical and statistical history, or medical and statistical tables of the state of health and disease in the said city and district.

"*2d*, That with this view, each physician and surgeon, more especially each *physician*, besides noting, as usual, the names and ages of his patients, be requested also to specify the following particulars: their trade or occupation, their place of residence,—if in Glasgow, what part of the city; if in the country, what shire or county; whether their abodes be in dwellings apart from others, or in hamlets consisting of a few houses, or in towns or villages; with remarks, if such occur, on the healthines or unhealthines of the situation.

"*3d*, That in order to procure an accurate meteorological journal of the weather, a barometer, thermometer, and rain-guage, each of the most approved construction, be established at the Infirmary; that an exact note of the temperature and weight of the atmosphere, of the quantity of rain, and also of the points of the wind, be taken, and recorded each day by the apothecary, or some of the clerks appointed for the purpose.

"*4th*, That each physician be requested to lay before the medical committee on the last days of December, a list verified by his signature, of such diseases as he has treated during the preceding year, with the results as to complete recovery, partial amendment, or death. That each surgeon be requested to deliver at the same period, a similar detail, also verified by his name, and embracing the same circumstances, together with a list of operations performed; also, if the operation admitted of different modes, specifying the mode pursued; as, for instance, if amputation, whether by the circular incision or the flap; if lithotomy, the particular mode preferred, and the instruments employed, &c."—P. 16.

In accordance with the above resolutions of the Directors, a short sketch of the medical and surgical practice of the hospital was given in the annual report for the year 1827; but ever since that period, the annual reports contain no evidence that the highly laudable request of the Directors had attracted the attention of the medical officers of the institution. The surgeons of the establishment have, however, much to their praise, given a regular account of the results of their hospital experience in the Glasgow Medical Journal ever since its commencement in 1827. One of the surgeons (Dr Macfarlane), has published an instructive volume, containing an account of the interesting cases which came under his care during the time he was in office.

In 1829, the Directors decreed, "that all students feeing the Infirmary, should also, at the same time be obliged to fee the courses of clinical medicine and surgery, which thereafter were ordered to be regularly delivered by the attending physicians and surgeons on the cases under their charge in all the medical and surgical wards of the establishment." A student is charged only six guineas for permission to attend the hospital two years, including the clinical lectures. Our author says,

"With respect to the advantages of the Glasgow Royal Infirmary, as a practical school of medicine and surgery, I think they are both numerous and important; for whilst in the great capitals, such as London, Paris, &c. the patients are distributed over many hospitals, they are here concentrated into one. The extensive and diversified manufacturing establishments, also, of this city, and the surrounding counties, exposing the vast population engaged in them, to accidents, often of the most appalling description, render this Infirmary, in my opinion, superior to any which I have seen either at home or abroad. But, besides these cases which the Glasgow Infirmary pupil has the opportunity of observing, and hearing commented on daily, either in the wards or at the regular clinical lecture, there are others of a no less interesting description, which make their appearance in the waiting-room for advice; indeed, I know no better sample room in the world, for an enlightened observer of human nature, than in the waiting-room of this Hospital.

"There is also another great advantage attending the surgical practice of this Infirmary, which I believe exists nowhere else, I mean the election from among the pupils, *without fee*, of ten dressers, each quarter, to assist the surgeons. When this free education is compared with the L. 52, 10s. premium for the obtaining of a dressership to some of the London Hospitals, the result ought to tell on the education of the Glasgow pupil. I might say much here, also, as to the care with which the cases, admitted into the Hospital, are recorded in the Journals, and the daily reports taken at the bed-sides of the patients, often of themselves forming a good clinical lecture. These, the pupil of this Infirmary, has not only an opportunity of seeing in the hands of the clerks, who accompany the medical officers in their rounds, but also may be perused by them during four hours of the day in the Hospital. The operations and inspections also are most punctually advertised, in a conspicuous place in the pupils' room, the day before they occur; and at the top of every patient's bed, may be remarked on a small card, his name, date of admission, disease, diet, treatment, &c."—Pp. 19, 20.

In the Edinburgh Infirmary, the dressers are elected from the pupils without fee, and they continue in office for six months,—a measure which is perhaps preferable to that of an election each quarter.

Dr Buchanan very graphically illustrates the advantages of clinical instruction, in the following quotation:—

"As to the importance of clinical medicine and surgery, this is so very obvious, that all must be impressed with it. If we compare the practice which we read of in books, or even hear inculcated in lectures, with that which is brought under observation at the patient's bed-side, the difference will not fail to strike the most careless. Many of the publications which have issued from the press, both in former and more modern times, upon the most important points of medicine and surgery, are so confused and contradictory, that I have often been led to think, the student would do better not to trouble himself with them at all, but read at first in the great volume of nature, where correct information is alone to be obtained. Indeed, without this observation of nature's processes at the patient's bed-side, and the reasoning which must follow on every case which meets the Hospital pupil's views, and where their feelings in every scene of affliction are so much interested, the lessons attempted to be enforced elsewhere must fall, I fear, with listlessness on the ear. Without this careful study of the variety of symptoms, and modifying circumstances of each particular case, arising from its causes, its combinations, constitutional peculiarities, and progress, the young practitioner's future career will be stained by empiricism, and his success in after life in proportion doubtful. With respect to lectures, either medical or surgical, as they are sometimes delivered in the schools, they are, in my opinion, of very little advantage, consisting as they too frequently have done, of theory manufactured in the study, the fruit perhaps of a brilliant imagination, than drawn from real life, and the result of careful induction. Surgery (at least) to be well taught, ought, in my opinion, to be less a treatise than a demonstration of disease,—rather a descriptive lecture, than an assemblage of precepts or theories. Better far would it be, for the student, to know nothing of diseases at all, than to have to correct his impressions, received in the class-room, by those in the Hospital. He may be told in the lecture room of inflammation and its consequences, and, as is generally the case, much of his valuable time may be occupied with fine-spun theories on this all-engrossing subject, but only present to his eye, a patient, who has just made his appearance from some of our magnificent manufactories, and lies in the accident ward of this Hospital, with his leg, it may be, shattered by some steam-engine gearing, and what now are his sensations? what his interest? and what, in fine, the instinctive reasoning on the case? Here, he must have inflammation, and perhaps in all its stages and varieties; and tell me now, whether what is seen, touched, and properly commented on, at the bed-side, does not, ten thousand times more strongly, rivet his attention than all which he may previously have heard on the subject? Again, as to the diagnostic department of our art, in the lecture-room, the pupil may be told what hernia is, what are its causes, symptoms, diagnosis, prognosis, and cure; but let a patient make his appearance in the waiting-room of this Infirmary for advice only, and let him there uncover his disease, and what pupil, who has heard mere lectures in the university, will now be able to say what disease the poor sufferer labours under, and what ought to be done? He observes that there is swelling of the scrotum, some appearance of obscure fluctuation, considerable pain, and a constipated state of bowels; the poor patient is taken to the ward, and, with a trocar and canula, a puncture is made into what was, by this university pupil, supposed to be hydrocele, when behold no water flows; he now gets confused, agitated, and alarmed, and so he may, he has got into a herniary sac, he has dashed into the intestine, and the miserable sufferer is doomed, if not to death, to a fate more horrible,—to an incurable and loathsome artificial anus! With respect to operations on the dead subject, as performed in the class-room, I may here add, that the pupil requires only to be present in the amphitheatre of this Hospital, for a few moments during an operation on the living, to be instantly struck with the difference. In the class-room all is smooth, all natural, and most easily dissected. In this practical school, on the other hand, all is agitation, and the parts about to be the subject of operation, are, it may be, confounded, displaced, and imperfectly seen through the surrounding disease,—all the frame of the unfortunate and sensitive sufferer is unsteady,—and cries, which would melt the most obdurate, too often pierce the heart, and unnerve the hand, of the most skilful and determined. All our ideas of external objects are vague, until they are presented to our senses,—until the animated picture of real existence is exhibited; then, but not till then, can we, with any degree of accuracy, say what this or that disease is; and in proportion to the magnitude of the gallery which the pupil has the advantage of attending, and the number, variety, and importance of the living plates of disease which meet his observation, if I may so express myself, so will he be able afterwards to advance to the practice of his profession with comfort and satisfaction to himself, and advantage and success to those committed to his charge."—Pp. 18, 19.

The Directors may be divided into three classes. The first consists of the Professors of Medicine and Anatomy in the University, the Member of Parliament for the borough, the Lord Provost, Dean of Guild, Deacon Convener, and President of the Faculty of Physicians. The second class of directors are eight in number, seven of which are annually elected by five corporate bodies, and the eighth is nominated by the established clergy. The Directors of the third class are annually elected by ballot by the general court of subscribers. This class is ten in number. The annual election of the Directors takes place on the first Monday of January, and shortly after they are generally divided into six committees, namely,

1. The Weekly Committee.
2. The Medical do.
3. The House do.
4. That on Accounts.
5. That on Annual Subscriptions.
6. That on Provisions, Wines, &c.

Superadded to the Court of Directors, which, both as a legislative and executive body, has the sole management of the affairs of the hospital, there is another very important class of individuals, annually elected by the Directors from the general list of subscribers, namely, daily visitors. Their duty consists in one of them, each day of the year, at an hour most convenient for themselves, perambulating the wards of the hospital, examining the side rooms, closets, &c. questioning the patients as to any complaints against their nurses, medical officers of all ranks, &c. &c.—in short, acting as inspectors-general of the institution and reporting, in a book kept for the purpose, any remarks which they may think expedient to make for the information of the Directors, who meet weekly, and regularly examine the visitors' book.

There being a very limited number of acting physicians in Glasgow, so much so that the Managers of the Infirmary had not the means of appointing a third physician, or of supplying the place of either of the present ones, they therefore enacted, on the 1*st* of August 1832, "that any gentleman who shall have been fifteen years in general practice, and who shall have obtained the degree of Doctor of Medicine, previously to his election, shall be eligible to be physician to the Infirmary." This edict has led to some rather warm discussion between two parties, one of which is self-denominated "*Real Physicians*," while they designate the other party by the title of "*Surgeons having Degrees*." The point at issue possesses no interest beyond the precincts of Glasgow, and even there it will be only very temporary. We would recommend the parties concerned to "agree to defer" on many topics, and to refrain from applying opprobrious appellations to their opponents, unless they wish to become the sport of the public. The "Real Physicians," in a manifesto addressed to the Managers of the Glasgow Infirmary, refer to certain usages which were alleged to be observed in the respective duties of physicians to the army and army surgeons, which was rather an unfortunate appeal, in as much as before their protestation was drawn up, the rank of physician to the forces had been abolished, and army surgeons with, or without degrees, had become eligible to every medical appointment in the army.

Our author speaks highly of the advantages enjoyed by medical students in the Glasgow Infirmary, especially those who devote their attention particularly to surgery. With respect, however, to the clinical lectures, he states, that "only about twenty lectures are delivered during the winter session;" and asks the following question: "Is it in consequence of the small number of lectures on clinical medicine given in this Infirmary, that the Faculty of Edinburgh have refused to recognize the Glasgow ticket in entering for M. D.?" Dr Buchanan affirms with great justice, that clinical lectures "ought to be given at least twice or thrice weekly;" while he at the same time complains that the Senatus Academicus of Edinburgh exercises a "flagrant and tyrannical abuse of their powers," because, we presume, they will not consider twenty clinical lectures as a full and complete course of lectures. Our author thinks that the Directors of the Infirmary ought to remonstrate with the Edinburgh Senatus Academicus on the subject. When the requisite number of lectures is given by the medical clinical lecturer, we have no doubt that the representation of the Directors of the Infirmary, or any other public body, will meet with due consideration by the Senatus of this University. Dr Buchanan has not stated why only about twenty clinical lectures are delivered, and we are unable to supply the omission.

There are four surgeons attatched to the establishment, two senior and two junior. Every surgeon is, in the first instance, elected as junior surgeon for two years, and after an interval of two years he becomes eligible as senior surgeon. Our author asks, "Would the regulations in the appointment of surgeons not be improved by having the term of hospital attendance extended to four years instead of two? one year of this term prior, and one year subsequent, to the two intermediate ones of active duty being devoted to consultations?" The subject of the appointment of surgeons by rotation in the Edinburgh Infirmary has undergone much discussion, and various plans have been tried. About the year 1766, "the Managers, in consequence of the inconveniences which had arisen from the College of Physicians attending by monthly rotation, having appointed two physicians to the hospital, and finding similar inconveniences to arise from the whole body of surgeons attending, in the same manner elected four, to whom they committed the inspection of the whole chirurgical department. These four surgeons, named substitutes, were to divide the year equally, each having his quarter, the other surgeons or ordinaries of the incorporation likewise attending in monthly rotation. The four substitutes, besides their quarterly attendance, had likewise their monthly turn with the rest, and when the month of any of the four substitutes fell in with his quarter, then either the next substitute in order was to become his assistant, or he was to apply for the assistance of another for that month, that the attendance of two might at no time be wanting in the Infirmary." The substitute surgeons were each to receive a small salary, and in many respects they seem to have acted as house-surgeons. This regulation did not meet with the approbation of the incorporation of surgeons, between whom and a committee of the managers a conference took place; and after the matter had been long protracted, the managers, in the year 1769, made the following changes in their former act:

"1. That, in place of the same four substitutes being continued, the managers would change one of them annually, and elect another member of the incorporation of surgeons in his place."

"2. That they would make this annual change and election according to seniority, and in the order in which the gentlemen willing to act as substitutes or ordinaries stand in the list presented by them to the board of managers."

Under such regulations the patients of an hospital could not receive all the relief and assistance that might be expected from the medical art, the members of the incorporation of surgeons had little opportunity of promoting their own improvement, and the science of medicine was more likely to retrograde than to advance towards greater perfection.

After long altercation, and much warm discussion, between parties concerned in the welfare of the patients in the Infirmary, and others whose motives were less evident, or perhaps less laudable, the existing regulations were framed, by which the surgeons are elected for a period of twelve years. Four years is the period a surgeon may expect to act as assistant, the next four years he has the immediate care of patients, and the last four years his duty is that of consulting surgeon. The only emolument a surgeon can expect to receive for his attendance at the Infirmary is the benefit which may arise from the permission granted by the managers for him to deliver clinical lectures upon the cases of his own patients during a period of *two* years.

It is the opinion of many respectable members of the medical profession, that the plan of rotation, or temporary election, ought to be altered, and that every surgeon to an hospital should hold his appointment *ad vitam aut culpam*. Those who hold a different opinion allege, that permanent appointment might become a temptation to surgeons to continue in office long after the failings of nature had deprived them of the power of be ing useful to their patients, instructive to pupils, or creditable to themselves. We are aware that the managers have been urged or recommended to elect the surgeons for twenty years, so as to allow an individual to have the full charge of the sick for a period of ten years. In most of those establishments which are furnished with medical officers by periodical election, the periods for which the officers are elected have, we believe, gradually become of longer duration, in proportion as the welfare of the patients have been considered, and the interests of science encouraged.

The apothecary to the Glasgow Infirmary has a most multifarious duty to perform, and receives an annual remuneration of from L. 30 to L. 40. It may be remarked, that the surgeon-apothecaries of Edinburgh not only attended the Royal Infirmary without fee, but also furnished the medicines *gratis*, out of their own shops, from the first erection of the hospital in 1729 till 1748.

There are six clerks belonging to the establishment, two for the surgical, two for the medical, and two for the fever wards. They are elected by the Directors from among the more advanced dressers or students, and are at first appointed to the fever hospital, from thence they ascend, by regular promotion, to the medical wards, and subsequently to the surgical. This range of probationary service requires a period in general of three years. The clerks pay annually for bed and board in the Infirmary L. 30.

Ten dressers are elected each quarter from among the students. They pay no fee for the appointment. At the expiry of the term of service as dressers, the establishment grants a certificate if requested, that a student had been a dresser, for which the sum of five shillings is charged.

Chapter 6th is devoted to an account of the revenue of the Infirmary; and the 7th contains a detailed account of the expenditure. In one table, the construction of which must have cost the author immense labour, he has exhibited the whole expenditure of the Infirmary, from the year 1794 till 1831, inclusive. He has arranged the expenditure under seven different heads; namely, 1*st*, expenditure in regard to diet, &c.; 2*d*, medicines, instruments, medical salaries, &c.; 3*d*, furniture, repairs, &c.; 4*th*, miscellaneous expences; 5*th*, total of ordinary expenditure; 6*th*, buildings, &c.; 7*th*, grand total expenditure.

From this table, it appears that the average annual expence incurred by each patient on account of No. 1, (diet expenditure) is L 1, 10s. 0¾d. the average on account of No 2. 10s. 1d. and the average on account of No. 5 is L. 2, 9s.

2¾d. The mean daily expence of each patient in regard to diet, medicines, &c. comprehending total ordinary expenditure, amounts to *sixteen pence*. According to another table, it appears that, from the year 1812 till 1831, the average annual cost of each occupied bed has been L. 21. The highest average annual expenditure on account of each occupied bed is L. 29, and the lowest is L. 20. We are disposed to think that sixteen pence per day for each patient in hospital is rather a high average. But we are in want of statistical information in regard to the ordinary daily expenditure of civil hospitals, so as to compare the expences of one establishment with another, and by that means confirm or rebut our conjecture. The charge for the first two heads, namely, diet, medicines, &c. &c. will, it is true, be about 13½d. only; but still we think this a large average expence for a pauper establishment.

In military hospitals a stoppage of 10d. per day is made from the pay of each soldier while he is on the books; and this sum, we are informed, amply suffices to defray the expence incurred on account of diet, wines, spirits, washing, personal clothing, and the provisions of soldiers employed as servants. It is remarkable, indeed, that this small contribution of 10d. daily leaves commonly, after defraying the legitimate expences, a considerable surplus, which is returned to the war-office. For example, we have ascertained that the regiment at present quartered in the Castle has an hospital surplus amounting to L. 150, 17s. 3¾d., which has been accumulated during a period of eight months, or from the 2d May to the 31st December 1832, exclusive of L. 13, 8s. 7½d. that has been paid to country practitioners for medical attendance on detachments.

The accounts of military hospitals are audited with minute accuracy. The quantity of each article composing the different rates of diet, (of which there are four in military hospitals) is specifically set down, and consequently the expense attending a number of patients on one rate of diet is easily ascertained. A medical officer in the army affixes to the name of each of the men in hospital daily, the initial letter of the rate of diet he intends to be given to the patients, and this list is suspended in the ward, so as that the men may know exactly the quantity of diet they are ordered to receive. Extras, such as eggs, sago, fruit &c. &c. may be given by the medical officer, according to his discretion; but every thing must be marked in the diet roll, and this roll must be suspended in the ward, for the information of all concerned.

We specify these facts with the purpose of suggesting, whether a similar plan might not be adopted in the Glasgow Infirmary? In the regulations of the infirmary the matron is instructed to "be regulated in the diet by the infirmary diet table;" but it seems difficult to comprehend how she can be guided by a table which does not specify the quantities of the articles that compose the different "kinds" of diet. It appears (page 44) that in practice the "proportions (quantities?) are left to the matron's discretion," by which means she incurs a heavy responsibility that might be greatly reduced, were the diet table as specific in the quantity, &c. of the articles as it is in the substances to be used. We are at a loss to conceive how the accounts of an hospital can be accurately audited where the quantities of the respective articles of the diet table are left to the discretion of any servant of the institution. We have been informed of one hospital establishment where a large share of the management is left to the discretion of servants, in which it is customary for the patients to have recourse, when they please, to a refectory, where they solace themselves with a round of beef. This is certainly an excellent plan to keep an hospital full of patients.

According to Dr Buchanan, the means hitherto adopted for procuring medicines for the Infirmary would admit of great improvement. Were the apothecary to make up each three months a return containing an account of the medicines after the following form, we think the measure would be greatly to the advantage of the establishment.

Return of medicines, materials, &c. required for the use of the patients in the Glasgow Infirmary for the quarter ending 31st March 183

Names of Articles.	Remained last Return.	Since received.	Total.	Expended.	Remains.	Required.

This requisition should be examined by the medical committee of the managers, and after receiving their sanction, let it be presented to the druggist. We think it far from being expedient to permit any servant to incur debt, on account of an establishment, without the specific sanction of responsible functionaries. No such liberty ought to be permitted.

Prefixed to Chapter 8th are several very interesting tables. The second, which is entitled, "List of diseases treated in the Glasgow Infirmary from 1795 till 1831 inclusive, is remarkably so." With the materials afforded by this return, we shall endeavour to show our readers the diseases of the patients which have been admitted, and the relative prevalence of each disease.

Diseases.	Gross No. of Admissions.	Relative prop. per cent. of each disease.	Diseases.	Gross No. of Admissions.	Relative prop. per cent. of each disease.
Fever,	14200	28.4	Cynanche, &c.	259	
Various,	4730	9.4	Small-Pox,	271	
Ulcers,	3719	7.4	Sprain,	262	
Inflam. internal,	2770	5.5	Testicle diseased,	258	
Syphilis & Gonor.	2625	5.4	Spine diseased,	237	
Rheumatism,	1973	4.	Malingering,	214	
Fracture,	1798	4.	Vaginal diseases,	200	
Dropsy,	1644	3.1	Heart diseased,	185	
Consumption,	1418	2.9	Stricture,	178	
Joint diseases,	1239	2.4	Dislocation,	165	
Diseases of the skin,	1125	2.2	Epilepsy,	158	11.5
Diseases of the eye,	1038	2.	Diabetes,	152	
Dyspepsia,	1036	2.	Uterine diseases,	143	
Apoplexy & Palsy,	887	1.7	Gangrene and sphacelus,	129	
Abscess, acute and chronic,	857	1.7	Calculus & gravel,	121	
Cancer & Scirrhus,	741	1.5	Constipation,	103	
Diarrhœa & Dysent.	723	1.4	Polypus.	88	
Wounds,	674	1.3	Mania and Monomania,	78	
Erysipelas,	601	1.2	Hernia,	73	
Contusions,	581	1.	Aneurism & Varix,	66	
Burn and Scald,	459		Cholera,	26	
Tumours,	451		Suicide,	19	
Sibbens,	420				
Caries and Necrosis,	354				
Fistula,	333				
Scrofula,	329				
				50,108	100

Of this number 35,000 were discharged cured.
——— 4,593 relieved.
——— 1,529 with advice.
——— 2,384 desire.
——— 715 irregular.
——— 335 improper.
——— 365 remitted.
——— 220 incurable.
——— 4,067 dead.

The mean ratio of mortality was 1 in 12 of the persons admitted. In hospitals where the admission and discharge of patients are left to the discretion of medical officers, or the "desire" &c. &c. of patients, we attribute extremely little importance to the statements in regard to the mean ratio of death among the inmates. Much important and accurate information might be obtained by carefully constructed returns of the sick of hospitals; but the plans for arranging and collecting the elementary materials ought to be wisely devised, and the execution should be closely watched by the superior officers. Dr Millar is esteemed the father of *hospital returns.* He adopted them on the opening of the Westminster dispensary in 1774, and carried them on with great zeal for many years. We are of opinion, that by far too little attention has been paid by the managers of hospitals to this means of obtaining correct information of various kinds respecting charitable establishments. Indeed the science of medical returns is still

in its infancy. Dr Millar says, medical returns are "so necessary to a physician, that, however attentive he may be in other respects, he cannot, without their assistance, judge accurately of the effect of the medicines he prescribes, nor of the method of cure he adopts." To render the materials contained in registers useful, they ought to be periodically concentrated, so as that the results may be easily comprehended. The tables should also be as uniform as possible, that the returns or results of one period or one establishment may be readily compared with another.

The appendix to this volume contains a variety of documents of more or less interest to medical inquirers. The first is a copy of the Charter of the Glasgow Royal Infirmary, and the second is entitled, "Glasgow Royal Infirmary Regulations." This document contains a detailed account of the duties of the respective officers and servants connected with the institution.

ART. III.—*The Substance of the Official Medical Reports upon the Epidemic called Cholera, which prevailed among the Poor at Dantzick between the end of May and the first part of September* 1831, *as transmitted to their Lordships; being an Analysis of the said Epidemic in that city, founded upon actual observation and accurate inquiry; with important and well authenticated Facts relative to the same Disease, as it prevailed among the poor in other parts of the North of Europe.* By JOHN HAMETT, M. D., London. *Published by the Authority of, and Dedicated by Permission to, His Majesty's Most Honourable Privy Council.* 1832. 8vo. Pp. 189.

SO much has been spoken, written, thought, and imagined, on the subject of cholera, that we fear most rational persons are heartily tired of any thing more on it. It is, nevertheless, not likely that the public will be suffered, for a considerable time, to enjoy any approach to tranquillity on this head; for, independent of the multitude of the ephemeral essays and pamphlets with which the emergency overwhelmed the press, many works of more elaborate character will continue long after, at various intervals, with different degrees of urgency, to solicit attention.

Of all the publications to which this epidemic has hitherto given birth, the present is by an infinite number of degrees decidedly the best. It forms, indeed, a much nearer approach to the model of the history of an epidemic disorder than any work which we have for a long time perused. With a distinct conception of the mode of observing the origin and progress of epidemic distempers, the author proceeds about his task like one who both knows what he ought to do, and by what means it is to be effected; and though he cannot be said to be altogether neutral, he collects and arranges facts with the strictest impartiality, and deduces and states his conclusions in the tone of a cool and dispassionate observer, who wishes every one to think for himself. We see no angry or contemptuous recrimination, no violent or outrageous language, and no harsh and intemperate denunciation or censure of opinions opposed to his own. Every statement is advanced in a cool, temperate, and business-like manner; and every sentiment is expressed in terms so moderate, as not to awaken the wrath of even the most irritable disputant.

Dr Hamett begins with a short sketch of the medical topography of Dantzick, which is still further illustrated by a plan of the town and environs; and he adds also a sketch of the climate and the meteorological peculiarities previous to the appearance, and during the prevalence of the epidemic.

It appears that this great commercial emporium of the cornfields and granaries of Poland, and the forests of Pomerania, which is situate on the low western bank of the Vistula, is built on the verge of a flat level alluvial soil, which forms the valley of that river, and which, originally very marshy, has only of late, by embankments, been more perfectly drained. These, however, are occasionally broken down by the violence of the inundations of the Vistula; and as the town was originally fixed on the bank of the river, without any regard to the health of its inhabitants, and exclusively with a view to commercial facilities,—between its local position on the one hand, and the ditches of stagnant water on the other, by which its fortifications are secured, its atmosphere is rendered one of the most humid that can well be imagined in the North of Europe. From its position on the narrow portion of the valley of the Vistula, also, it is exposed to all the humid and terrestrial exhalations which emanate from the wet grounds along the whole of the valley; while a chain of low hills, on the west, intercepts the westerly winds,—the only aerial currents, by which its humid atmosphere could be removed or its surface could be desiccated.

The town itself consists of five divisions, distinguished, according to their situations, by the names of Old Town, Long Garden, Nether Town, Right Town, and the Speicher, the first, third, and last of which are low, and, indeed, built chiefly on piles driven into a morass. Indeed, scarcely any part of this town can be dry; for whilst it is intersected by the Radaun and Mollau, two sluggish streams, which pursue a noiseless course to the Vistula, the whole town is encompassed by one broad ditch, and three-fourths of it, on the side near the Vistula, by an additional narrow one, both communicating with the small stream already mentioned, and with the Vistula.

The human abodes which seem to spring out of this congregation of communicating waters, are said, in their towering elevation and density of inhabitants, to bear a close resemblance to those of the old town of Edinburgh. But if the latter have been often justly accused of setting cleanliness at defiance, the former are said to be by many degrees more regardless of this social virtue. The population is stated to be about 70,000, or 72,000.

From the account of the weather, we do not perceive that we can extract any precise or useful information.

It is entirely unknown by what means cholera arose in Dantzick, or at what time the first cases appeared. From very strict and accurate official inquiries, it results that the earliest known cases had appeared about the 27th May among the labourers in the mud-barges in the Neufahrwasser, or harbour of Dantzick. Of these cases, the following extract contains the circumstances:

"1. The labourer Gottlieb Klamann, 27½ years of age, of Nickelswalde in the Nehrung, had worked in the larger mud-barge under the said Gutziel, since the 15th of May. On the 27th of May, at six o'clock in the morning, while taking over a flat mud-boat to the other side of the Vistula, he found himself suddenly taken so ill with weakness, and cramps, that he could work no longer, and was, therefore, taken back by his father, brother, and father-in-law, who happened to be in the same boat, and laid him down. He was taken home the same day to Nickelswalde, three German (about fourteen English) miles from Dantzick. On circumstancial inquiry of his wife, we found he had previously an affection of the lungs. His case was considered to be one of epidemic cholera; by Dr Barchewitz, only a subordinate, or modified form of the epidemic, just commencing. He died at a much later period. 'Seventeen persons, who lived in the same house, remained well.'

"2. The labourer Michael Laas, 44½ years of age, from Krohnenhoff, in the Nehrung, was attacked with vomiting and looseness on the 27th of May, at about nine o'clock in the morning, after having been at work from about four o'clock, in the lesser mud-barge, under Wolff. On Saturday morning, the 28th, he was conveyed in a boat to Weickelsmuende, and thence in a carriage to his house in Krohnenhoff, 2½ German (about 11½ English) miles from Dantzick. He did not vomit on Friday and Saturday.—on Sunday once; the looseness lasted till Monday. He died on the 31st (Tuesday) at four o'clock in the morning. It was stated that he caught cold at his work; to which and the marshy air developed, Dr Barchewitz attributed his complaint. 'In the same chamber with him, which is only about ten feet square, were his wife and seven children; in an adjoining chamber two other persons, all of whom remained well.'

"3. On the 28th of May, the labourer Constantine Benkendorfe, from Einlage, who had been employed fourteen days in the lesser mud-barge, under Wolff, was taken sick in the same, with vomiting and looseness, especially towards noon. Towards evening he was conveyed home to Enilage, 2½ German (about 11¼ English) miles from Dantzick, where he died the same evening at 9 o'clock. He had been affected, more or less, with intermittent fever for nine months. 'His wife with four lodgers in the same house, and sixty-four persons, in all, who came in the closest contact with him, kept well; while one man who fetched a loaf of bread from the mud-barge, and the master of a ship which lay close to it, took sick of the cholera.'

"4. The labourer Henry Granz, 31 years of age, from Krohnenhoff, in the Nehrung, 2½ German (about 11¼ English) miles from Dantzick, who had worked in the lesser mud-barge since the 16th of May, left it on the 28th at 2. P. M. and went home in company with his comrades, Manthey of Schnackenburgh, and Dirschau of Krohnenhoff, who left him at 5. P. M. apparently in good health. While heated, he drank coffee, and then ate fish with potatoes. At about 1. A. M. on the 29th, he became ill, with vomiting and looseness, and immediately after with cramps, and died at about 7. A. M. 'His wife, and a daughter three years old, lay the night with him in the same bed; close by lay a boy, three years old, and in a corner of the chamber, his mother-in-law. The chamber is thirteen feet long, ten feet broad, and 6½ high, with one window of three feet, whereof the upper and under rows of panes were closed with boards. Besides these persons, fourteen more lived in the same house, and all of them continued in good health.'

"5 The horse driver, Michael Buckholz, in the service of the waggoner Aurifo, in Dantzick, contractor for supplying horses to work the mud-barges. He had been employed in the morning of the 28th, was taken ill at about ten o'clock in the forenoon, and complained of cramps in his feet. He was conveyed in his master's carriage to his lodgings in Zeissau Street, in the old town, and died in the evening of the same day. The body was taken to the Town Hospital, and examined by Dr Baum, the chief physician of this hospital, who found adhesions of the lungs, and violent inflammation of the bowels, with inflammation and ulceration of the mucous membrane."

It is subsequently stated, that, besides the cases now enumerated, no other attack of cholera took place at that time in the mud-barges. From the Police Reports, however, it appears that *three* cases occurred subsequently in the middle of June; soon after which these barges ceased to work.

In all the vessels lying in the harbour, no case of fatal sickness took place till the 30th May; neither among the numerous labourers employed in building the pier, nor among those occupied in the other establishments at the harbour. On the 30th, a vessel named the Monna, direct from Riga, arrived in Dantzick roads; and as her captain, Brandt, had been ill for two days, and died on the 31st, it was only presumed that the disease was cholera. He was attended by his two sons, neither of whom, nor any of the crew, showed any symptom of the suspected disorder.

The general appearance of the disease in the town, and its preference for certain localities, for the vicinity of water and humid situations, and for the persons of certain classes of society, was illustrated with remarkable force in the instance of Dantzick.

"On the 30th of May, cholera appeared not only in the town, but also in the suburb, Schlapke, belonging to Schidlitz; thus, *at the same time, in two quite different parts* of Dantzick. It attacked several individuals in Eimermacherhoff, Rambau, and Seigen, three streets adjacent to each other, not far from the principal ramparts of the fortress, and Mottalau guard-house, which is situated on the confluence of the Mottlau and Radaune streams, into which all the dirt and filth of the low and old town in particular are conveyed. The Mottlau, which is the larger stream, is lost in the Vistula, at about 2000 paces from its place of junction with the Radaune. The above mentioned streets are, accordingly, in the lowest part of the city, and were, in March 1829, quite inundated,—the water rising, in several houses, from five to six feet, and in some even to the ceilings on the first floor. The ground there is rather marshy, and intersected by canals, which serve as drains for carrying of the dirt and filth. When the Vistula is higher than ordinary, parts of these streets are generally more or less inundated.

"The suburb Schidlitz, distant about a quarter of a German mile from the city, is in a dry and more healthy situation; the houses are more airy, and less contiguous than those of the abovenamed streets,—and the manner of subsistence and occupations of the inhabitants, of a totally different nature; those of the abovementioned part of the city gaining their livelihood chiefly by such occupations as relate to the shipping,—while those of the suburb of Schidlitz and Schlapke, are chiefly agricultural or mercantile labourers, and subsist on the produce of their gardens. *Here only one woman fell sick at an early period, and subsequently but few cases appeared.*"

"It not only appeared, as above stated, in the old town, but continued to spread, irregularly, *without any marked order from personal contact or proximity*, in low, damp, and dirty, or close and offensive situations, all over the city, among the destitute and poor; who are here, in general, ill-clothed, ill-fed, uncleanly in their persons and dwellings; never wearing flannel next the skin; subsisting chiefly on indigestible and unwholesome food, and in the habit of using pernicious drinks:—habitual drunkards, of whatever class, have been almost invariably the victims of this malady. Besides these, it occasionally selected for its objects, in comparatively healthy spots, persons of particular constitutions and habits, in easy circumstances of life, who happened to suffer in their health in the various ordinary ways, from exposure to cold damp air, especially at night; from profuse perspiration suddenly suppressed, the bad effects of conjoined wet and cold, &c. &c. and, above all, from recent derangement of the stomach and bowels: namely, diarrhœa, indigestion, and surfeits, from certain kinds of bad food especially, —more so, if complicated with previous deficient action of the liver, consequent sluggishness of the bowels, and feculent accumulations in them. These last states have been more or less common in such cases as I have more particularly observed, as may be seen in the history of numerous cases in my possession.—It also appeared in the villages, in the ravines and valleys of the high grounds near Dantzick, where it proved fatal among many of the poor ill-fed Catholics, who, in general, received the sacrament of Extreme Unction in the beginning of the disease, and refused all medical assistance afterwards.—The higher and middle classes escaped the disease; a few excepted, who brought it on by a want of common care of themselves, or who became incidentally predisposed to it, as shown in the Police Reports, and the interesting communications to me from Mr Gibsone, the British Consul in Dantzick: they not having been near, or at least, ascertained to have been near, infected persons.

"In the proof of these statements, between the 28th of May and the 23d of July inclusive, 835 persons, consisting almost entirely of the wretched and unhealthy poor, were attacked with cholera, of whom only 195 recovered, according to the General List, making the amount of deaths, during that period, 640. During this period of eight weeks, notwithstanding that nearly 2000 inhabitants of the dwellings of these sick, were shut up for twenty-one days, subject to the bad effects of fear, want of exercise, and fresh air, though indeed having the essential advantage of being well fed, only 189 persons fell sick in 109 dwellings, of 82 houses, in each of which, at the same, or at different periods, there were more than one patient: and in these 189 patients, a probable or predisposing cause of the disease has been officially reported in the Separate List. Of these 189 patients, again, it will appear that 130 were attacked without any evidence of their having been near the disease, and only 59 who had been near it. It will also appear that, of the above 109 dwellings, 63 were houses or detached dwellings, in each of which, at the same, or at different times, there were more than one attack, —while in 5 of these houses, again, there was a separate dwelling, with one attack; and that the remaining 46 were dwellings of 24 houses, in each of which, more than one attack took place also, at one, or different times. These 46 are considered separate dwellings, inasmuch as they were front, side, or back buildings, with separate entrances, or as being otherwise distinct from the other cholera dwellings, constituting parts of any one house. In 19 of these houses were 41 of these separate dwellings, with one cholera patient in each; in the remaining 5, were the 5 separate dwellings above-mentioned, with, as above-stated, one in each.

" In a population of between 70,000 and 72,000, in Dantzick and its immediate districts, the whole mortality from cholera was officially reported to have been 1028 of both sexes and all ages, coinciding in all particulars of the disease with the above mentioned 640, between the 30th of May and 8th of September. The numbers actually taken ill of the disease, I have been unable to ascertain. The physicians in Dantzick, as I repeatedly stated in my reports home, did not report all affected with cholera.

" As it is of importance to know the proportion of its victims of both sexes, and at the different decimal periods of life, I beg leave to state that, of these 1028, according to the official report alluded to, 539 were men, 368 women, 59 boys, and 62 girls. Of these, 26 males and 20 females died at different ages, under six years.

	Years.				Males.		Females.
From	6	to 10	-	-	19	and	26
	11	15	-	-	14		16
	16	20	-	-	21		14
	21	30	-	-	126		54
	31	40	-	-	120		69
	41	50	-	-	117		65
	51	60	-	-	81		74
	61	70	-	-	66		57
	71	80	-	-	13		28
	81	90	-	-	3		7
Above	-	90	-	-	1		

Pp. 23— 26.

In the fourth chapter the author gives a very accurate delineation of the symptoms exhibited by the epidemic, which presented three principal forms, 1*st*, according as the cases were rapid, severe, and fatal; 2*d*, according as they were protracted and fatal; and 3*d*, according as they consisted of less severe cases which terminated favourably.

The fifth chapter is devoted to the elucidation of the morbid appearances, which is extremely accurate, and corresponds very closely with the results of our own observation.

The sixth chapter is devoted to the medical treatment occasionally pursued by the physicians in Dantzick; and the seventh contains a view of the author's opinion on the means of prevention, and a sketch of his general and particular mode of treating cases of cholera. The contents of these chapters, we thus mention generally, as it is quite superfluous to enter into any analysis of them. To those who are desirous of studying the characters of the disease, and comparing and identifying it with its appearance elsewhere, they are extremely valuable, and may be recommended as most satisfactory documents.

The subsequent part of the work is chiefly devoted to the consideration of those facts and arguments which tend to elucidate the difficulties of the question regarding the manner in which the disease originated and was propagated. In collecting the materials for this inquiry, the author has shown most indefatigable diligence and unrivalled accuracy, and proves that he has the most correct views on the mode of determining a question so difficult and important; and what he has here published, will not only be valuable to every person interested in the study of the character and progress of the particular epidemic, but will afford most useful guidance in drawing general conclusions regarding the character of epidemic distempers.

With the view of placing before the reader a full and impartial view of the epidemic, Dr Hamett presents, in the first place, a *general* cholera list of all the persons attacked in the town and suburbs of Dantzick, within the bills of mortality, between the 28th May and the 23d July 1831, inclusive, embracing the names, occupation, or rank of the individuals, the dates of attack, and of death or recovery, with the exact residence specified by the number of the house, or the street, or place in which they lived, and the number of persons, above and under 14 years of age, shut up in each, as above stated, for at least 21 days.

This is followed by what Dr Hamett terms a *separate* list, in which he classifies the particular persons attacked by cholera from the 30th May to the 23d July, inclusive, exhibiting the houses in which more than one person was attacked, with their names, ages, occupations, remarks on their habits, kind of abode, whether by separate or common entrance, and shows the dates of attacks, and the termination in death or recovery.

The collection and arrangement of the materials of which these tables consist must have cost the author infinite labour and, so far as we can judge, they appear to be redacted with great accuracy. With the view of rendering these results, however, more obvious and intelligible, Dr Hamett presents his readers with two analytical tables, deduced from these lists, and thence forms a general summary of the whole, which we think will prove at once the extraordinary diligence bestowed by him in tracing the progress of this epidemic, and endeavouring to elucidate the laws according to which cholera is propagated among multitudinous masses of human beings.

"From the first Analytical Table it appears that, in 16 houses, each consisting of separate dwellings, there were 32 cases, one in each of two separate dwellings belonging to each house; in 3 houses 9 cases, one in each of 3 separate dwellings belonging to each house; and in 5 separate dwellings 5 cases, one in each,—belonging to a house or detached dwelling, in which there were more than one case; so that there were 46 cases in 46 separate dwellings belonging to 24 houses. Seven of these separate dwellings had no other inmates than the patients; in the remaining 39 dwellings, 202 persons were shut up.

"From the second Analytical Table it appears that, in 50 of the above-mentioned houses or detached dwellings, there were 100 cases, 2 in each; in 10 of these detached dwellings, 30 cases, 3 in each; 4 in each of two, and 5 in one; together making 143 cases in 63 detached dwellings. Four of these dwellings had cholera patients only in them; in the remaining 59 dwellings 288 persons were shut up.

"With reference to the 189 patients mentioned in 109 dwellings, it is material to state first, that *more than one* of those singly in separate dwellings belonging to one house, were in some instances *simultaneously attacked;* secondly, *more than one* occasionally in the same dwelling; and thirdly, that *more than one* in either class of dwellings, were in general attacked *nearly* at the same, or within a *short time* of each other.

"Thus, of the 46 patients in 46 different dwellings in 24 houses, 10 were attacked, 2 at a time in 10 different dwellings in 5 houses; and those respectively remaining in the different dwellings belonging to one house, within a very short time of each other. Again, of the 143 patients mentioned in 63 houses or detached dwellings, 38 were attacked in the first instance in 192 at the same time in each—in 4 of which was a subsequent case—3 at the same time in one; and of the remaining 102, *more than one* in their respective dwellings nearly at the same time.

"In the relative progress of the disease in its first attacks in different dwellings, these double and triple cases, taking place, each at the *same time* in one dwelling, may be considered as single attacks, and their products, therefore, in a comparative view, as separate attacks, totally independent of each other. Accordingly, out of 189 cases in 109 dwellings, there were 10 in 10, and 41 in 20,—or 51 attacks independent of each other in 30 dwellings,—leaving 138 cases in (79+4) 83 dwellings; of which cases, 36 out of 46 took place, as stated, each in a separate dwelling,—leaving 102 in 47 dwellings; of which, again, 43 *primary* attacks took place in the same number of dwellings, leaving 59 in 47 dwellings, or 52 second and 7 third cases in 5 of these dwellings; in which 47 dwellings only, amid the whole of the epidemic during two months, according to the Separate List, there could be said to be any personal proximity, or contact with the disease, prior to its attack.

"Of these second cases, 10 took place, 2 at a time in 5 different dwellings, in 2 of which were single third cases,—giving 42 second cases in 42 dwellings, in which were 5 third cases in 3 dwellings; of these, 3 single cases took place at one time in the same dwelling, and one at different times in 2 dwellings—leaving 39 single second cases in 39 dwellings.

"Here it will be necessary to recollect that the isolated cases of cholera, previous to the first appearance of the epidemic, the four first cases officially reported, and the other cases not officially reported, as given in the history of it, all occurred without the medium of personal proximity or contact with this disease; while, again, all in contact with, or near those affected, escaped it.

"From the preceding facts, it evidently appears that, over and above the cases last mentioned, 776 (835—59) persons were attacked with cholera, without any evidence of contagion from personal proximity or contact; while 1932 (1991—59) persons shut up for twenty-one days in 520 (567—47) cholera dwellings, and exposed to contagion, did such an agency exist, escaped the disease;—and further, that *fewer cases took place even among this immense number thus shut up, than abroad among a much less number of the same classes, entirely apart from cholera patients, and their dwellings.* These are most assuredly material facts, evincing not only the absence of contagion, but even immunities from the disease. The fact is, that, while thus shut up, although deprived of exercise and fresh air, and subject more or less to the bad effects of fear, grief, vexation, and other evils incident to such confinement, they were well-fed, and not so much exposed to the casualties more commonly ending in the disease, as those of the same classes abroad.

"Here, it may be observed that, while, out of a population of from 70,000 to 72,000, in the course of two months, only 835 were attacked with cholera, of whom again, only 195 recovered, there were, according to the testimony of Dr Dann, senior, a veteran practitioner in Dantsick, from 2000 to 3000 of all classes affected with other complaints; and according to that of Mr Gibsone, in the Garrisonal one, at *one time*, at a later period, 1007, chiefly with intermittents and remittents.

"Now when, with all the preceding facts before me, I consider the ratio of recovery (195,) to mortality (640), and the ratio of the number (835) attacked with the disease, to that (from 2000 to 3000) of other diseases during the same period, and to that of the population at large (from 70,000 to 72,000), together with all the exciting causes which I have enumerated in the history of the epidemic,—and corroborated in my accounts of the localities and climate of the place, on the one hand, and the various predisposing causes in the affected on the other, I do not, for my own part, wonder at the occurrence and prevalence of the disease. But to return to facts.

"That the disease made its first appearance, and subsequent progress over such parts of Dantzick, as I have enumerated, without any marked order from personal proximity or contact, with the exception of the above 59 persons mentioned in 47 dwellings, is fully evinced from the authentic statements herein made, and from the General List, in which not only the streets and places, but the numbers of the houses or particular dwellings of every person attacked during the first two months of the epidemit, when all affected were reported, are given in the order of attack.

> "From all I have heard, in addition to my own knowledge of the dwellings of numbers affected with cholera, from the official reports of the number of persons shut up in each isolated house, and of the dimensions, and general state of the 109 dwellings above-mentioned in particular, they were for the most part small, often crowded, dirty, and in such unhealthy situations as I have described; while the patients were, as I have mentioned, in general of the poorer classes, in want, aged, infirm, or of vitiated habits of body."—Pp. 39, 43.

These statements must be perused with pleasure by all who are interested in the application of accurate observation to the science of medicine. Different individuals may still entertain different opinions, regarding the question of the communicability of the disease; and those who have already declared their conviction of this property, cannot be expected easily to retract or to acknowledge that they were precipitate and unwarrantably confident. But all those who are desirous to form an opinion from facts, and to have some reason for their inferences, will certainly agree, that Dr Hamett has shown that there is no reason to believe that cholera in Dantzick originated from contagion, or was propagated by that agent.

To render these statements complete, it will be requisite to subjoin another extract relative to the further progress of the disease, and the kinds of persons most generally seized by it.

> "According to the daily summary Report of the Sanatary Commission at Dantzick, 1387 persons were reported to have been attacked with cholera, between the 30th of May and the 31st of August, inclusive, in 1831: of whom 1010 died, and 367 recovered. Of those attacked with the disease, according to that report, 237 were of the military, and 1150 of the civil part of the population. Of the military, up to the 31st of August, 105 died, and 129 recovered: of the civil, up to that period, 905 died, and 238 recovered.
>
> "According to an official document, furnished by the above Commission, the total number of deaths from cholera, from the commencement of the epidemic to the 8th of September in 1831, amounted to 1028 of both sexes.
>
> "The number of deaths of both sexes, at the different decimal periods of life, from cholera, is given in the history of the disease. These are important facts. Some, who recovered, had not been reported, as stated also in the history of the disease.
>
> "It appears from the above-mentioned official document, that in the Fairwater, on the Vistula, the Mottlau, and in the streets, 31 persons were found *without shelter;* namely 25 men, 5 women, and one boy, between 11 and 15 years of age, who *all died of the cholera.* Of the men without shelter, 9 were between 21 and 30; 10 between 31 and 40; 3 between 41 and 50; 2 between 51 and

60; and one between 61 and 70 years of age. Of the females without shelter, one was between 21 and 30; two between 41 and 50; one between 51 and 60; and one between 61 and 70 years of age.

"According to the said official document, there died of common diseases at Dantzick, in 1831, during the prevalence of the epidemic cholera namely:

In the month of June	222	persons,
In the month of July	232	ditto,
In the month of August	281	ditto, and
Till the 8th of September	68	ditto
Total,	803	

"On the other hand, according to that document, there only died at Dantzick in the same months in 1830, namely:

In the month of June	116	persons,
In the month July	114	ditto,
In the month of August	112	ditto.
Total,	342	persons.

"From the comparative mortality above-mentioned we evidently perceive the general as well as particular deleterious state of the air of Dantzick in the summer of 1831,—which is in accordance with what I have specified in my account of the climate of that city, and with what I have stated, from authority, of the prevalence of common diseases during the epidemic, in my Analysis of the Separate List."—Pp. 147-148.

The 12th, or concluding chapter, presents a very elaborate inquiry into the evidence for and against contagion, in which the author adduces a great number of important facts, and much interesting information, and argues the point with great force and conclusiveness. We can make room for his general deductions only.

"The following are reasonable inferences from the numerous facts hereto adduced on the subject of epidemic cholera:—

"I. That it is spontaneously produced in certain weak constitutions and disordered habits of body, in consequence of some indeterminate combination of certain atmospheric and local states,—and, occasionally, in consequence of different powers of electricity in the air on such consitutions and marked habits, as may reasonably be inferred from the progress of the disease in certain electrical states of the weather.

"II. That cholera spreads epidemically but irregularly,—still, —in accordance with marked personal and local states, more than any other epidemic.

"III. That *general infection*, in the sense I use it, is produced only by an unfavourable or malignant state of the atmosphere in certain localities promoting such a state; and *special infection* by the air being rendered still more deleterious on being pent up, and further vitiated by the *effluvia* of dirt or liquid filth, or one being contaminated with the foul air and *effluvia* of several persons, whether affected or not, in close places. But surely these incidental aggravating causes may be fully removed, or partly obviated at least.

"With reference here to contagion or non-contagion by merchandize:—

"The very nature, indeed, of the disease seems to indicate that it is not necessarily propagated by merchandize. Independently, however, of which, there has never been any evidence whatever in Dantzick, of its being so propagated; while all the authentic facts, which I have enumerated on this head, in that particular quarter, declare strongly against contagion in this way; to which I could add, as formerly stated, some others of a private nature also strikingly against it."—Pp. 187-188.

It hence appears that Dr Hamett draws a distinction between *contagion* and *infection*, by employing the latter term to designate that unknown vitiated or morbific state of the atmosphere, which is favourable to the formation of the same morbid action in the persons of many human beings at once. We know not how far this distinction is well founded; but we cannot spare time to enter into a controversy about a mere name; and we therefore commit it to the discretion of our readers.

We cannot take leave of the work without recommending its perusal in the strongest terms, to all persons interested in the enquiry on the nature of cholera, and the mode in which it is propagated.

It is mortifying to think, that in the present day, when more enlightened sentiments might be expected to predominate, the labours of the present author should have been treated with so little regard as they at first received; and that the praise-worthy resolution which he had adopted of doubting the contagious nature of cholera without good evidence, should have subjected him either to obloquy or hostility. With such proceedings the nineteenth century ought to entertain any feeling but that of satisfaction.

ART. IV.—*Practical Observations in Midwifery, with a Selection of Cases.* By JOHN RAMSBOTHAM, M. D. late Lecturer on Midwifery at the London Hospital, Consulting Physician Accoucheur to the Royal Maternity Charity, &c. London, 1832. 8vo. Part I. p. 422. Part II. pp. 507.

MIDWIFERY, though always cultivated in a greater or less degree as a branch of medicine or surgery, has nevertheless been too much neglected by rational physicians, and left too much in the hands of the ignorant pretender, or the specious charlatan. Physicians and surgeons have looked on it as as a species of degradation, to be obliged to attend or give advice to a pregnant or puerperal female, and have too often laboured, not unsuccessfully, to throw a degree of discredit and contempt on those who did. The result has been, that all those educated practitioners, who were more solicitous about the rank and dignity of their order, than the comfort and well-being of their fellow creatures, have shrunk with a sensitive delicacy from the practice of a branch of the art believed unworthy of the name of a liberal profession. The natural result of this has been, that midwifery has, in an infinitely greater degree than any other department, been left to accident and opportunity, and that it has fallen remarkably into the hands of the uneducated and ignorant, and those who, if they cultivated its rules, were abundantly disposed to disjoin it, and divorce it entirely from the general principles of medical science.

We cannot help thinking that in all this there is some prejudice, not a little ignorance of the present state and exigencies of society, and but a very moderate degree of wisdom and prudence. The grand argument by which it is pretended that midwifery is beneath the dignity of the physician or surgeon, is, that it is a natural process, and, therefore, may be safely left to nature, and those ancient gossips who pretend to be so familiar with that sovereign, but rather mysterious divinity. Such an argument we might expect to hear from a congregation of simple savages domiciled in mud huts upon the banks of the Shary, or round the sun-burnt shores of the lake Tsaad. But in a civilized community, where the habits of civilization tend so powerfully to convert what is in a state of nature, and in the woods, a natural process, into a very serious one, complicated very often with such morbid states and anomalies, as to sacrifice the lives of many women annually,—we cannot perceive with what shadow of reason it can be repeated or listened to.

It is a necessary consequence of the habits and modes of living conceived indicative of polish and refinement, that the curse originally pronounced on the first mother should be entailed in a multiplied and exaggerated form on all her daughters, exactly in proportion to the avidity with which all of us aspire to the refinements, the luxuries, and the unnatural habits, of what our ignorance makes us unwisely regard as necessary to happiness. So long as the present habits of social life, and polished communities exist, so long will pregnancy and parturition be a departure from the safety of that process, as it exists in the early, simple, and barbarous periods of society; so long

will it be complicated and aggravated with various morbid states; and so long will it afford anomalies sufficiently important and dangerous to perplex the best directed efforts of human wisdom.

It would be astonishing, indeed, if the cogency of these considerations did not show the necessity of throwing aside this unseasonable delicacy and reserve, and induce educated physicians to study the anomalies of pregnancy and parturition on the general principles of medical science. Pregnancy is no doubt a physiological process. But, from the circumstances now alluded to, it is liable to become, in a greater or less degree, pathological, and to be complicated with various pathological conditions, the nature and effects of which can only be understood in this case, as in all others, on the general principles of pathological action. Every one, therefore, who is desirous to prevent an art certainly mechanical, but not illiberal, and which is necessarily allied with medicine and surgery, from becoming the property of ignorance and presumption, it behoves to exert himself in rescuing from an alliance so discreditable, and to promote the cultivation of the subject on the general principles of philosophical inquiry. It is only in this manner that we can hope to place the obstetric art, and its legitimate and necessary dependencies, on the footing of a useful science, and that we can exclude from the number of necessary evils those resulting from presumptuous rashness, confident ignorance, or wanton cruelty.

It must be gratifying to every one interested in the improvement of medicine, to observe the gradual propagation and influence of these views, and to perceive that this department is much more frequently than formerly cultivated by scientific physicians and surgeons. We have on more than one recent occasion, directed the attention of our readers to the advantage derived from this change; and if they had never produced more than the recent researches in this country by Dr Lee, and in France, by Dance, Luroth, and Velpeau, on puerperal fever, it would nevertheless have been a most valuable result. We also had an opportunity of showing how much illustration the diseases incident to females derived from the application of the general principles of pathological inquiry in the hands of Madame Boivin and M. Dugées, and from being investigated by those who were thoroughly acquainted with the principles of medicine and surgery.

We have now to direct the attention of our readers to another production, which promises on similar grounds to be equally serviceable to the art of the accoucheur. The work of Dr Ramsbotham is evidently the production of one who, though perfectly familiar with all the practical difficulties of his peculiar department, never, however, loses sight of the great general principles of medical science. To call it merely a practical work, or a collection of practical facts, is to specify the least of its merits. Many a practical work we know which is of little use in practice, and which can never be made useful, from the writer's not taking the trouble to refer his practical facts, to general and intelligible principles, capable of communication to others, and of application in similar cases. From this objection we are happy to observe that the work of Dr Ramsbotham is in a very considerable degree exempt. Though the greater part of it consists of cases, the author arranges them in such a manner as to illustrate most of his general principles and rules, or at least to illustrate occasional exceptions;—and no one can peruse them without remarking, amidst the results of a long and laborious course of personal experience, the constant predominance, and the skilful application of the acknowledged principles of medicine and surgery, to the exigencies of the pregnant and parturient conditions.

It is unnecessary to advert to the accidental form of the work, published as it is in two parts. The treatise, viewed as a whole, may be said to consist of Dissertations on the process of parturition and its contingencies, illustrated by a copious Selection of practical facts.

The author proceeds first to consider the structure of the womb, in which he denies, and we confess with great appearance of reason, the muscularity of that organ. With great originality he argues, that the uterine substance in no respect, either in the human subject or in the lower animals, and at no period, resembles muscular structure, and that its action, even when contracting in the parturient process, is dissimilar to that of muscular action. Without pretending, however, to specify the kind of structure, further than by saying that it is peculiar, he maintains that it is quite as easy to imagine the extension which this structure undergoes, and its subsequent contraction at a certain time independent of muscularity, as to say that it depends on muscular action. In this sentiment, we confess we entirely agree with Dr Ramsbotham; and we further have thought, that the contraction of the uterus at the period of parturition seems more attributable to some action of its bloodvessels, some tendency which they either possess, or at that time assume, to contract, and thereby to contract the entire organ, than to any muscular fibres, or irritable or contractile power.

On the observations on the size, shape, and situation of the gravid uterus, which are very good, but contain nothing peculiar, we have no remark to offer.

When speaking of the placenta, Dr Ramsbotham properly directs the attention of the reader to the difference between the structure of that body in the human subject and in the lower animals, as affording a satisfactory mode of accounting for the occurrence of uterine hemorrhage in the former and not in the latter. This consists in the circumstance of the placenta, in certain orders of the MAMMALIA, being formed at its attached or uterine surface into the round but hollowed eminences denominated *cotyledons*, into which the blood-vessels of the fœtal part are inserted, and over which they circulate their contents. The effect of this arrangement is, that not only is each cluster of vessels isolated from the other, so that when one is detached, hemorrhage must be confined to that alone, and is therefore immaterial; but the fasciculated manner in which the vessels pass from the womb to the placenta, renders detachment or hemorrhage much less probable.

This arrangement, however, of the uterine division of the *placenta* is not common to the lower animals; and it is confined to the *Ruminantia* only, as the ox, deer, &c. and *Rodentia*, as the hare; and hence we cannot admit that it is in all cases adequate to account for the prevention of hemorrhage in these animals. It must be remarked, indeed, that the ovum is attached to the uterus in one of three modes: 1*st*, Either by a general adhesion of the whole external surface of the ovum to the mucous or inner surface of the womb, as in the mare and sow; or, 2*d*, by means of a spongy celluloso-vascular mass like the human *placenta*, as in the *quadrumana*, and all the digitated quadrupeds; and, 3*d*, by means of the cup-like eminences, or *cotyledons*, which appear to be a species of production from the *uterus*, as they are not expelled at parturition, but gradually disappear from the uterus, apparently by subsidence of the constituent vessels.

Dr Ramsbotham subsequently, when speaking of the management of the process of labour, justly observes, that, from this peculiar circumstance, "the life of every woman under the act of child-birth is necessarily exposed to a certain degree of risk;" and that this risk is not caused by the agonizing pangs the woman may have suffered, or by the violence of the exertions she may have been compelled to make under the act, but that "it arises solely in the nature of that connection which Providence has established between the mother and the child in the construction and in the mode of attachment of the placenta."

The mechanism of the detachment of this body should be perfectly understood, in order that the practitioner should comprehend distinctly his line of duty in every variety of case after the fœtus is expelled. The following observations show what Dr Ramsbotham thinks necessary on this topic:

> "At the full evolution of the *uterus*, and previous to the commencement of labour, the *placenta* occupies an internal space equal to its own diameter and dimensions; but after the expulsion of the child, the general volume of the *parietes* of the *uterus*, and the capacity of its cavity being each diminished in proportion to the degree of contraction it has undergone, the uterine space before occupied by the placenta is proportionally lessened, and shrinks into a less surface. The placenta, therefore, loses its former hold; it spontaneously falls off as it were from its preceding attachment, by the shrinking or contraction of the uterine parietes from beneath it; and its separation is attended with a moderate discharge of blood."

He afterwards proceeds to advert to the fact, that this natural separation may be prevented by absence of the uterine contraction, or impeded by morbid adherence of the placental to the uterine surface.

These representations are doubtless correct. But we conceive that they do not embrace the whole phenomena of the process; and we think that authors have not, in explaining the phenomena of the ejection or decision of the placenta, sufficiently adverted to the change which takes place in the circulation, and to the necessary tendency which that change exercises to the expulsion of the after-birth. It is manifest that the moment the fœtus is expelled from the uterus and begins to breathe, the current of blood takes a new direction; and the whole of that which was circulating between the placenta and fœtus is either retained in the substance of the former, or circulating in the body of the latter. The uterine blood takes also a new direction, being impelled chiefly into the *mammae*. But the chief circumstance is, that, by reason of the contraction of the uterine *parietes* and the general diminution of the organ, whether that is to be ascribed to some peculiar action of its vessels, or to the fibrous matter constricting its vessels, the numerous large vessels of the uterus are necessarily diminished in number and size, and cease to convey blood to those which communicate with the placenta. The fœtal blood at the same time being no longer returned, the vessels of the latter organ are in ordinary circumstances emptied and shrink; and from these changes in the utero-placental circulation chiefly, the *placenta*, drops as a matter of necessity, from the surface of the womb, shortly after the *uterus* has expelled the fœtus.

We perceive that Dr Ramsbotham does not allow to the uterine vessels the same degree of contractile power which he admits in the blood-vessels of the other parts of the body; and hence he argues they are indebted for contraction to "constriction of the several parts by the lessened *uterus*." It is of little moment, we believe, whether these vessels are allowed to possess contractile powers of their own, or are admitted to be contracted in consequence of the contraction of the *uterus*. But it is manifest, that, in admitting the circumstance of contraction, Dr Ramsbotham admits the most important element, in accounting, we conceive, for the new course of the blood, and the consequent expulsion of the placenta.

The mode in which we have now explained the expulsion of the placenta, shows the necessity of waiting a little. Such a change in the current of the circulation cannot be effected instantaneously; and it must vary in different individuals, according to the operation of a variety of causes. The observations of Dr Ramsbotham on the expression of this rule are extremely judicious, and deserve attentive perusal.

After impressing on the practitioner that, "to a perfect state of uterine contraction alone," he must trust for its safe expulsion and security after delivery; he observes, "to allow the placenta to remain in the vagina for a short space of time, can, at least, do no harm; its presence appears rather advantageous than detrimental, by inducing a return of that salutary effort, and by furthering those silent changes already in progress. The habit of hurrying the removal of the placenta, under all cases, cannot be too much deprecated. I offer no limit as to time; that must be regulated by the occurrences of each case, and the judgment of the accoucheur.

"As a general principle, then, it is desirable to wait patiently and quietly the return of uterine action, for the exclusion of the placenta, till either lapse of time or other occurrence prompts its removal. When the removal is determined upon, the particular mode must be regulated by the circumstances of each case. After a long protracted labour, in which the strength has been much exhausted, and in some cases of artificial delivery, an earlier extraction of the placenta may be more frequently called for, than in common instances.

"The time which thus elapses between the birth of the child and the extraction of the placenta, is an interval of uncertainty to the patient, and of anxious suspense to the accoucheur; especially when he is ignorant of the mode in which the placenta may be disposed of in the uterus. When that time is prolonged to an unusual period, a want of confidence is excited in the patient, and a distrust in the general management of the case arises in the minds of her friends, which require no trifling exertion of firmness to counteract and defeat. Whether it may become necessary to introduce the hand to separate, and withdraw the mass, or whether it may be naturally thrown down, are questions which cannot, at the present, be satisfactorily answered. The accoucheur is therefore not at liberty to make those consolatory assurances of the safety of his patient, which are so anxiously expected; yet he ought not to excite unnecessary alarm by the careless expression of his fears; he will have to exercise much caution and reserve in his replies to inquiries which should be conveyed in a tone of hope and confidence, rather than of despair. But whatever may be his sentiments respecting her state, it is a matter of no little importance, that he do not betray visible marks of alarm in the lying-in-room; they seldom fail to make a desponding impression on all parties.

"It usually happens, in the case now mentioned, that, after the lapse of a moderate space of time, the uterus resumes a slight degree of action; it is observed to lower, to become firmer, and to lessen in bulk: the placenta is felt coming within reach, and by and by descends. Under this state of things, there can be still no necessity for hurrying the extraction. The more completely the uterus throws off and excludes the placenta, by its own contractile effort, in the safer condition is the woman finally left. Previous to the return of uterine action, I must repeat the caution against pulling at the funis, a practice which, I fear, is but too prevalent. I allude to the usual mode of twisting the funis round the finger, bringing it to its bearing, and applying a degree of extractive purchase through its means. This is done for the purpose of exciting uterine action, when it is dormant, or of separating the placenta when adherent; but it is always a very doubtful, and even a very dangerous expedient. The attempt to withdraw the placenta by force by the funis, as long as it is out of the reach of the finger, as long as it is entirely enclosed within the uterine cavity, is at least premature and injudicious; and may prove seriously injurious. Indeed, the repeated teazing of the funis, is in itself not devoid of mischief. If the placenta should prove to be morbidly adherent to the uterine surface, this practice may separate a portion of it, and induce a sudden access of hemorrhage; or it may endanger a disruption of the mass, with the risk of some portion being left behind; or it may produce actual inversion of the uterus; or, whether the placenta be adherent or retained by irregular contraction, it may break off the funis, and drive us to the necessity of introducing the hand for its final removal."

These observations are highly judicious. But the language of Dr Ramsbotham is too lenient for the practice to which he adverts. We can conceive nothing more mischievous, irrational, or wanton than the practice of twisting, pulling, or tugging at the chord as is too often done; and we have little hesitation in saying, that all attempts of this description to remove the placenta ought to be unconditionally abandoned, and that the individual who persists in such attempts ought to be prohibited from operating on any human patient.

To the whole of these observations, indeed, we regret that it should be necessary to impress the propriety, nay, the indispensible necessity of attending, by the rash and officious conduct which we have known on more than one occasion to be observed, in the performance of this part of the duty of the accoucheur. In short, there is no part of the whole process of parturition, in which so many and such serious mistakes are committed, as in the interval between expulsion of the child and the final extraction of the placenta; and those only who know how may injuries and diseases of the *uterus* date their origin from this period, can have an adequate conception of the errors committed. The safest course, we conceive, is, as Dr Ramsbotham repeatedly impresses on his reader, to wait in the first instance,—to trust, in short, to the change which *must* take place in the utero-placental circulation; and then, if it appears that either hemorrhage is going on, or some other cause, as morbid adhesion of the placenta, prevents its detachment, to take measures accordingly.

Dr Ramsbotham does not pretend to specify the time for this change; and he justly observes, that, as it may vary in each individual, the accoucheur must rather be guided by the respective circumstances of the case as they arise; by the general state of the patient; by the feel of the uterine tumour; by the quantity and effects of sanguineous discharge; and by the nature and length of the preceding labour; than by simple attention to the lapse of time.

He thinks, however, that it will rarely be necessary to wait longer than two hours before having recourse to extraction by art; that its necessity will be obvious before this time; and that in an average of cases, if the placenta be not thrown off, within one hour from the birth of the child, it is detained by some unusual cause. In the case of hemorrhage, or other urgent symptoms, he admits that earlier removal will be required. The rules for the manual part of the operation are delivered with great skill, and minute knowledge of the necessary details to insure safety.

We have some judicious observations on *adhesion*, that is, *morbid adhesion* of the placenta, which the author, after attributing to agglutination of the placental surface, to the uterine surface, in consequence of previous injury or disease, finally ascribes to inflammation, effusing "coagulable lymph, by which the placental and uterine surfaces are united." In truth, adhesion of the placenta is in every case the result of this process; and in adverting to the circumstances under which it takes place, and the remote causes by which it is followed, authors have too often lost sight of the morbid action on which it depends. It is indeed not uncommon in those cases, either of threatened or habitual abortion, in which there has been previous congestion of the uterine vessels and hemorrhage, and subsequent inflammation and its natural products. It is hence that the present author states that he has observed adhesion of the placenta to follow a blow (cases 8 and 18), pressure (case 21), a fall (case 22), or to be accompanied with constant dull pain, as in cases 1, 9, and 19, especially during the night, and referred to some part of the uterine tumour; all of which phenomena either produce or indicate inflammatory action; and it is on the same account that after a certain time it produces more or less hemorrhage. The vessels not being capable of contracting, in consequence of the preternatural adhesion and false membrane, and the *uterus*, notwithstanding, proceeding to shrink without corresponding closure of the vessels of the placenta at the adherent part, disruption necessarily takes place at every uterine contraction. Of the same tendency is the fact, that morbid adhesion of the placenta is liable to take place in those women who have had frequent threatenings of abortion.

The mechanism and theory of this hemorrhage are very well explained by Dr Ramsbotham, who justly ascribes it to the separation of one part while the other continues attached. "When the placenta is *completely* detached by contraction, the extremities of those uterine vessels which passed into its cells are closed. But when it is only *partially* detached, they remain open; they cannot contract. The vascular connection and circulation between the adherent portion and its correspondent surface, are continued as long as it adheres, and the blood sent into its cells is returned to the mother's body. But the connection and circulation between the separated portion and its correspondent surface are interrupted, or rather destroyed, in that separation; and the blood transmitted to it escapes out of the body. Besides, the vessels of both the attached and detached portions freely anastomose, and afford a ready supply the one to the other, so that the latter not only empty themselves, but also allow the blood of the former to escape."

From these observations, and from the extent of the placenta detached, Dr Ramsbotham explains the suddenness, the rapidity, the continuance, and the quantity of the hemorrhage; and hence he deduces the necessity of detaching the whole, and inducing the contraction of the *uterus* by the introduction of the hand.

This method, so necessary and so urgent, is doubtless extremely painful, and, after all, it is sometimes uncertain. It has often been with us a matter of consideration, whether it would not be practicable, as the hand is already in the womb, to compress the *detached* part of the *placenta* against the corresponding part of the uterine surface, so as to prevent the escape of blood, until the *uterus*, corresponding to the *detached* part, should contract so much as to abate the chance of hemorrhage, and facilitate its final and safe expulsion. This we only advance as a probable method of counteracting the effects of an accident so serious. It is clear, that in the grand or painful irritation of the *uterus*, it is not more injurious than the other method.

It is under these circumstances that it is most urgent to adopt immediate and decisive measures. The moment it is ascertained by the firm attachment of the placenta, and, nevertheless, the draining of more or less florid fluid blood, that this body is morbidly adherent, the practitioner should lose no time in extracting the placenta. Dr Ramsbotham properly observes, that as some blood must unavoidably be lost in detaching the morbid adhesion, it is indispensable to allow the patient to lose as little as possible, and to proceed without loss of time to extraction. The subsequent observations on this interesting subject are extremely instructive; and while they show the experienced, cautious, and skilful practitioner, they cannot fail to be read with great advantage by every one who wishes to understand his duty in this critical emergency. We can only, however, make room for the concluding observations, which we are confident every one will agree with us in thinking cannot be too generally known.

> "Upon the whole, my experience enables me to say, and I think the following recitals will sufficiently bear me out in the assertion, that there is scarcely a case in the whole circle of midwifery, more pregnant with immediate and impending mischief; there is not one in which the beneficial services of an experienced accoucheur are so obvious, even to the actual preservation of life; there is not one in which sound judgment, passive coolness, and determined resolution are so absolutely necessary, as in floodings after the birth of the child, caused by an adherent placenta. And yet, every ignorant medical tyro, who has but just emerged from the trammels of the counter, or who has attended a few lectures, thinks himself qualified for the practice of midwifery, and dares to dash at these dangerous cases at every risk to his suffering patient. If he prove successful, he gains unmerited credit, and is emboldened in his ignorance, to the injury of some future patient; if he be unsuccessful, his failure is attributed to any cause but the true one. I am well aware, that every man must perform an operation for a first time; but he ought previously to make himself well acquainted with its nature, and with the obstacles he may have to encounter. In the case before us, a man is deprived of the advantages resulting from the exercise of every sense but that of touch; he has to depend upon information derived from the fingers alone."—Pp. 93, 94.

The justice and truth of these observations are most amply and forcibly illustrated by 24 cases of various degrees and forms of adherent placenta, the details of which ought to be impressed on the memory of every one who wishes to practise midwifery with comfort to his own feelings.

Dr Ramsbotham then proceeds to describe the different varieties of retention of the *placenta*, and to specify the practical rules adapted to each. In all these he very properly reprobates all attempts to extract the *placenta* by pulling at the umbilical chord; and in all of them he recommends cautious, gradual, and gentle distension and dilatation of the contracted part of the *uterus*.

The author considers next *disruption* of the *placenta*,—a term which he employs to designate that accident, in which the general mass of the *placenta* is broken, and the ruptured part is left behind in the womb, adhering to its original point of attachment. It is one of the consequences of premature and violent attempts to extract by pulling at the chord, and is quite sufficient to establish the rule, that this ought never to be practised. Its occurrence is demonstrated by the fact, that on extraction more or less of the *placenta* is wanting; and it may give rise, either to flooding or to inflammation of the uterine mucous membrane and substance. From the general symptoms indeed, described by Dr Ramsbotham, we have no doubt that it frequently gives rise to, or at least is followed by, that insidious and unmanageable form of puerperal fever, which depends on inflammation of the substance and veins of the *uterus*.

> "The general strength is exhausted, the pulse becomes quite tremulous, the belly swells and is painful, the countenance is dejected and anxious; the patient is restless, tosses suddenly from side to side, throws her arms about, and is almost instantly under the influence of delirium; the fœcal evacuations voided are involuntarily excluded, and death closes this melancholy scene, within a week or ten days after delivery."—"The latter period of the preceding symptoms assumes the character of those met with under the last stage of *typhus*."

In one of the fatal cases given by Dr Ramsbotham, the supervention of a violent rigor on the morning of the fifth day after delivery, clearly indicated the occurrence of the latter circumstance,—uterine *phlebitis*.

Under the head of *relaxation of the uterus after delivery, and subsequent enlargement*, Dr Ramsbotham describes a very dangerous accident of the parturient process, viz. internal flooding, and which we, therefore, presume he considers as the cause of this enlargement and distension. Its chief peculiarity consists either in the *os uteri* being contracted, or in being plugged up from *coagula*, which prevent the escape of the blood, as it is effused from the uterine vessels,—which again is caused by very slow effusion of blood. This he ascribes principally to deficient contractile power; and hence he recommends the attendant to supply the defect, by applying the hand externally, and grasping the uterine tumour firmly, which he represents to be very seldom unsuccessful in producing efficient contraction and cessation of the hemorrhage. To this accident Dr Ramsbotham hypothetically and conjecturally attributes the fatal termination of the case of the Princess Charlotte. Few accidents take place so unexpectedly as this; and little doubt can be entertained that it is one of the most frequent causes of sudden death after delivery; but in the absence of positive facts, it is impossible to say what was the precise cause in the unfortunate case alluded to by the author.

The method practised by Dr Ramsbotham to counteract the fatal tendency of this state of the womb, appears from the result of the cases given to have been very successful.

Collapse after Labour is a very vague term. But under this the author arranges all those instances of sudden and often fatal sinking of all the powers which occasionally, without adequate obvious cause, follows delivery. No loss of blood of any consequence, no manifest morbid state can be recognized; the delivery is successfully finished, and the placenta is expelled in the usual time and mode; and while the patient is to all appearance doing well, she suddenly complains of unusual faintness and an indefinable species of weakness and disorder, without absolute pain either in the belly or elsewhere. The pulse, however, becomes weak and small; the countenance grows pale and cadaverous; the patient becomes extremely restless; and after being seized with pain across the chest she suddenly expires. This anomalous state Dr Ramsbotham ascribes to want of accommodation of the parts within the belly to each other under the new situation in which they are placed by the abstraction of pressure, in consequence of the expulsion of the contents of the womb. If this were the case, then it might be conceived that the mischief could be prevented by the use of a large tight bandage; and that the usual means applied quickly and with great firmness ought to obviate all the bad consequences. This, however, alone the author thinks inadequate; and he recommends the active use of the diffusible stimuli, as ether, brandy, &c. A very large dose of opium or of sedative liquor we conceive might be useful, not as a narcotic and stimulant, but by interrupting the connection for the time between the frame at large and the nervous system, which seems in this instance to receive some sudden and violent deleterious impression.

The different varieties of *Protracted Labours*, and the causes on which they depend, are very elaborately and carefully investigated.

The author has evidently met with, and had occasion to manage, every variety of this difficult form of the process; but he appears farther to have very great experience, and no small success in cases of deformed pelvis, in cases of difficult or protracted parturition from tumours either of the uterus or pelvis, and in those from some disease or preternatural enlargement of the head or body of the child.

The ordinary form of protracted labour from rigidity of the *os uteri* he generally attempts to relieve by blood-letting;—a remedy which is certainly too much neglected in this simple class of cases, and which we can assert from experience is infinitely more powerful, at least in first or early births, and in robust or rigid subjects, than all other means, mechanical and physical.

Rupture of the *womb* gives rise to some useful observations, and is illustrated by a variety of instructive cases.

From *Preternatural Labour*, or that embracing *breast* and *shoulder* presentations, which presents nothing very peculiar, we proceed to the subject of *Uterine Hemorrhage*.

This accident Dr Ramsbotham distinguishes, like Dr Rigby, into *accidental* and *unavoidable*, the former, as that accurate observer remarked, from accidental or occasional detachment of the *placenta* from the *uterus*; the latter from the detachment which necessarily results from the dilatation of the neck and orifice, when the placenta is unfortunately implanted either over the latter or near it. The two are clearly and precisely distinguished by Dr Ramsbotham.

"If, by means of vaginal examination at the extremity of the finger or fingers, a flaccid membranous bag within it be distinctly perceptible, the case is at once determined to be one of *accidental* hemorrhage. But if, instead thereof, a strange flesh-like substance, adherent round the inner surface of the *os uteri*, be met with, the case is sure to be one of *unavoidable* hemorrhage. Many shades of difference will be found to exist between very obvious cases and those of a less distinct, or of a mixed kind. It is not difficult to distinguish between the bag of the membranes and the placenta; but sometimes it is not so easy a matter to discriminate between the *placenta* and a firm coagulum plugging up the *os uteri*. Yet a mistake on this point may be productive of serious mischief; I shall therefore briefly notice the marks of distinction."

"When the placenta is implanted over the mouth of the womb, the finger encounters a fibrous flesh-like mass, adherent round the inner edge of the orifice; and during this enquiry, especially if the finger be pushed upward with but a slight degree of force, the hemorrhage is temporarily increased. But when a *coagulum* is formed within or at the *os uteri*, its surface is smooth, and even to the touch it possesses a less degree of resistance than the *placenta*; and it may be either penetrated by the finger or made to recede."

In the management of the first form, the usual directions are ably and clearly laid down. But it surprises us somewhat that Dr Ramsbotham does not advert to the employment of blood-letting, which, as a means of counteracting accidental hemorrhage, is in many instances infinitely more powerful than all the other means of anodynes, astringents, cold, &c. conjoined. Accidental hemorrhage is so often connected, indeed, with a plethoric state of the system, and with more or fewer marks of local inflammation, that all other means are only palliative until some blood is drawn from the arm; and it requires this measure as urgently as hemoptysis, or any other hemorrhage.

Situations, however, occur, in which nothing can restrain the discharge of blood, unless the contraction of the uterus, which expels the contents of that organ; and in such circumstances, especially towards the close of pregnancy, Dr Ramsbotham recommends the immediate employment of this proceeding. The paleness of the countenance, faintness and weakness, or failure of the pulse, are the general symptoms, from which he thinks, the practitioner must infer the immediate necessity of this measure.

> "But objections have been started against this practice upon the futile plea, that if the discharge of the *liquor amnii* did not restrain or suspend the hemorrhage, and if manual delivery became afterwards necessary, such delivery would be rendered more painful and difficult by the contraction of the *uterus.* I have found no practical truth in this argument. If the uterus contract well, and its action become effective, the child will be expelled. If it remain flaccid and indisposed to contract, it will offer little resistance to the passage of the hand for manual delivery."

No circumstance, perhaps, in the whole course of obstetric practice, calls so loudly for skill, energy, and promptitude, as that of *unavoidable* hemorrhage. It is the result of a malposition of the placenta, which, though not indicating its peculiar character till the close of the period of the pregnancy, must then necessarily continue by reason of the increasing dilatation of the neck and orifice of the *uterus*, until the placenta is entirely detached. Long before this, however, the hemorrhage is repeated so often, and becomes so copious and irresistible, that life is extinguished by pure loss of blood. This will be at once understood from the following observations.

> "When the placenta is implanted over, or is attached very near to, the mouth of the womb, an attack of flooding *must* take place upon the commencement of the relaxant process in the *cervix uteri*, preparatory to labour. That occurrence is a necessary consequence of some separation of the placenta from its original attachment. In explanation of this positive assertion, I must beg to remark, that for six or seven months after conception, the uterine structure

has been more particularly developed in its fundus and body; and that about that period, the *cervix uteri* becomes shorter and thinner. While these changes are going on, the placental attachment is so much disturbed, that some of the uterine vessels passing into the placental cells are separated; the immediate consequence of which is a discharge of blood in greater or less quantity, according to the degree of detachment. But it rarely happens, that the first discharge is carried on to that extent, as to excite much alarm; it is a far more frequent occurrence, that a sudden gush should take place, or a slight degree of flooding should continue for a short time, and subside altogether; the woman then thinks no more about the accident.

"After an uncertain lapse of time, however, perhaps after an interval of two or three weeks, during which she seems to be tolerably well, a recurrence of flooding takes place; and perhaps to a much greater extent, than on the previous occasion; this also may possibly be restrained by natural, and medical means. After another uncertain lapse, the flooding returns with increased violence, and probably continues for a greater length of time; and even, if it should again cease entirely, it *will* return either before, or immediately upon the commencement of labour.

"A woman placed in this perilous situation, therefore, holds her life under a very uncertain tenure; for the flooding may return at any one moment between its last cessation and the beginning of labour, when it must certainly recur with increased violence; whether that process may have been accelerated by the effects of the discharge, or may have been protracted to the end of gestation. The nearer the completion of the ninth month an attack of flooding takes place, the more rapid and dangerous does it usually prove; for at that time, the uterine vessels, passing into the placental cells, have acquired their greatest degree of magnitude; by any separation of their attachment, therefore, their contents are discharged with increased velocity."—Pp. 172—174.

The observations on the practical measures to be pursued, which show judgment, energy, and decision, will be perused with great interest. It is well known that the rule in this critical emergency is expeditious or immediate delivery. But it too often happens, that the practitioner, either from want of knowledge of the exact state of his patient, or the absence of that calmness and presence of mind which can alone enable him to adopt and accomplish the necessary measures, delays and protracts this proceeding until the patient is sinking, and all means are hopeless. The only reason for delay is the rigidity of the *os uteri*, which may still be so great as to render delivery impracticable, or at least a very difficult matter for the practitioner, and tedious and painful, and consequently dangerous, to the patient. Dr Ramsbotham therefore properly recommends, that it should not be attempted until there is good reason to believe that no difficulty of the kind can be encountered, and, above all, disapproves of the practice of attempting forcible dilatation by the introduction of two or more fingers, unless the attendant proposes immediately, by the introduction of the hand, to complete delivery. On the other hand, it is extremely unsafe, and therefore improper to wait until, by loss of blood, the patient is so enfeebled, that she must be unable either to stand delivery, or to rally after that operation; and Dr Ramsbotham justly remarks, that it is better to have recourse to delivery one hour too soon than one hour too late.

The directions for this process are delivered with such clearness and precision, that we must give them at the risk of being rather lengthened.

> "When the operation of turning is determined upon, and is once commenced, the difficulties to be encountered in that proceeding are to be met with fortitude, and a cautious perseverance to its termination. The left hand, formed into a conical shape, is to be introduced into the vagina, then gradually through the os uteri into the uterus itself. At the moment of dilating and passing the os uteri, hæmorrhage is tremendously increased, and if at this moment, from alarm or other cause, the operator should be induced to withdraw his hand, the consequences will be frightful, and serious indeed. When he has got thus far in the operation, therefore, he must proceed at all risks. If the os uteri be found but little dilated, and be somewhat rigid, it must be carefully and gradually opened by one or more fingers, afterwards by the thicker part of the hand, until the entire hand gradually slides within the uterine cavity. The route, which the hand must take, will be decided by the occurrences of the moment. But it will generally be found more easy to pass the hand by the side of the placenta, than to penetrate its substance. After entering the uterus, the hand ruptures the membranes, seizes hold of one foot, or of both feet (if they can be readily met with,) and brings down the breech through the os uteri, the pressure of which upon the bleeding vessels materially checks the discharge. Having gained these advantages, the operator now procures a little respite from action; and of this interval it is desirable to take advantage carefully to view the situation of the woman. If the loss already sustained shall have brought on syncope, or excessive faintness, recourse must be had to stimulants, previously ready at hand, but if it should not seem to have made much impression, such means become unnecessary. At this stage, also I seldom fail to place my hand externally upon the uterine tumour, to ascertain the degree of contraction it has already undergone. The conduct must henceforward be guided by existing circumstances. If active contraction takes place in the uterus, it is safer to allow the child to be expelled by it, at least as far as the head, than to extract the body rapidly by force; but if uterine action be languid and distant, a moderate degree of extractive assistance may be necessary to withdraw the body, arms, and head. If the uterus after the birth of the child should be found tolerably well contracted,

the placenta, which is usually separated, may be withdrawn at pleasure."—Pp. 179—181.

It is, however, a very interesting fact, that even for the anomaly which is the cause of all this mischief, nature seems, in certain occasions, to make a suitable provision to obviate its consequences. This consists in the placenta being first expelled, after which the hemorrhage undergoes a cessation, and the fœtus is then expelled; the womb contracts efficiently, and the patient proceeds in the regular way to recovery. Of this singular exception to an exception, Dr Ramsbotham records four cases (154, 155, 156), in all of which the *placenta* was quickly expelled by violent uterine contraction, the hemorrhage then underwent speedy and rapid abatement, the fœtus was extracted, and lived, and complete recovery took place. The peculiarities of these cases were, that in all of them the process of placental expulsion was effected with such rapidity and so simultaneously, that hemorrhage was quickly suspended. The only practical conclusion, therefore, that can be deduced from the circumstance is, that in the management of this species of presentation and hemorrhage, the accoucheur ought to deliver as quickly as possible, by detaching the whole of the *placenta* simultaneously and speedily. It is obvious that no reliance can be placed on the natural efforts.

To the subject of *parturient convulsions*, which next comes under consideration, it is unnecessary to advert.

The subject of abortion and its various causes is treated with clearness and precision; and the author explains the principles to be observed in preventing this accident in a very instructive manner.

The rest of the work is occupied with the subjects of *retroversion* and *polypus* of the *uterus*, on each of which the author makes judicious remarks, illustrated with several valuable cases.

To these subjects we have so often of late had occasion in different works to direct the attention of our readers, that it would lead only to repetition, were we now to resume their consideration with the present author. It is sufficient that we recommend the work of Dr Ramsbotham to the attentive consideration of accoucheurs and general practitioners. They will find it in all respects a judicious and masterly collection of obstetrical knowledge, pervaded everywhere with common sense, and illustrated by general medical and surgical principles. The cases alone all contain a rich and instructive fund of practical information, and will often afford safe guidance in many difficult emergencies.

We must not conclude the work without adding, that it is in general written in an agreeable and interesting style, and shows that the author is not inattentive to this minor virtue.

Art. V.—*A Theoretical and Practical Treatise upon the Ligature of Arteries.* Translated from the French of P. J. Manec, M. D. Professor of Anat. and Operat. Med. &c. &c. By J. W. Garlick, M. R. C. S. and W. C. Copperthwaite, M. R. C. S. *With Notes and Appendices, Selected from the Writings of many celebrated Surgeons.* Halifax and London, 1832. 4to, Pp. 277. Fourteen Coloured Lithographic Engravings.

It is justly observed by the translators of the present work, that there are few of the principles of which it is more necessary to obtain a right understanding than those which should direct the application of a ligature upon an artery; and that the successful result of operations depends more on our knowledge of this fact than on any other almost, anatomical knowledge excepted, in the whole course of surgery. The importance of just conceptions on this topic, therefore, must be manifest.

Though perhaps no individual treatise can be said to excel the original one of Jones on this subject, or the faithful abstract and commentary on his experimental deductions by Hodgson, it constitutes no ordinary objection to their utility, that both are so rare that they may be regarded as out of print.

The essay of Manec, which was published in France in 1832, is valuable, in so far as it combines, with a full and accurate view of the anatomical and physiological properties of arteries, the most approved doctrines on the application of the ligature as a means of repressing hemorrhage, and some accounts of methods suggested by more recent observations. Independent of this, which constitutes the first two divisions of the work, M. Manec, in a third part, takes a very comprehensive and detailed view of the surgical anatomy of the individual arteries, and the mode of enclosing them in ligatures, whether with the simple object of obliterating their canal in aneurism, or repressing hemorrhage from wounds and injuries.

These circumstances chiefly have influenced the present translators in introducing it to the particular notice of the profession in England; and while we think they have not only rendered in so doing an important service to the practice of surgery, we are happy to observe, that the manner in which they have executed their task enhances much the value of the service.

Not only have Messrs Garlick and Copperthwaite translated the original in a highly creditable manner; but, with the view of putting the English reader in possession of every thing that he ought to know, they have introduced, in the form of illustration, commentary, or annotation, all the most important facts and principles contained in the writings of Jones, Hodgson, Gordon, Meckel, Scarpa, Guthrie, and Velpeau on the structure of arteries; Cooper, Scarpa, Lawrence, Travers, Velpeau, and Thiorry on the ligature of arteries; and indeed whatever might render the treatise complete on the subject.

These circumstances will show how strongly the present work is recommended to English surgeons. Next to the treatise of Hodgson, we regard it as the most indispensable for the surgeon to study carefully.

The work is embellished with fourteen good lithographic coloured engravings, either illustrating the effects of the ligature on arterial trunks, or explaining the peculiarities of the surgical anatomy of those arteries which become the subject of operation.

It is unnecessary to enter into any minute detail of the contents of the treatise. But we subjoin the following observations on Torsion, a mode of suppressing hemorrhage adapted to small arteries;—and the general deductions established by the author.

" *Of Torsion of Arteries.*—It has lately been proposed to arrest the circulation of the blood in arteries, by performing upon them the operation of torsion; thus to avoid the necessity of leaving any foreign body, either in the wound or upon the vessel. We shall not enter into any considerations respecting the question, who is to be regarded as the discoverer of this mode, or remark upon the eulogiums which it has of late received; they who are personally interested in the inquiry must claim, and the public determine, what share of merit is due to them; at present it will be merely stated that this operation was proposed by MM. Amussat, Velpeau, and Thiorry, almost at the same time, and that each of these surgeons adopts a peculiar plan. The two former have recommended its use in those hæmorrhages which are consequent upon the great operations, or the wound of an artery: M. Thiorry, however, proposes that it should be applied to the treatment of aneurisms, *i. e.* to arteries which maintain their continuity, and have been exposed by an operation of the surgeon. In these cases, he insinuates a solid instrument under the body of the vessel, with which he twists the artery in such manner as to produce an effect which corresponds exactly with that obtained from the pad of a tourniquet which encircles an extremity, when it is compressed before the performance of an amputation. Should the vessel be wounded, or cut through, as occurs during amputation, M. Thiorry seizes it with Patin's forceps, (selecting them of such size as is proportionate with that of the artery,) and performs the operation of torsion by giving to them a complete rotatory motion, which is performed five or six times successively, when the vessel is small, and ten or twelve times when it is of a larger size.

" M. Velpeau uses a pair of grooved, or even common dissecting forceps: he lays hold of the extremity of the arterial tube, and carefully separating it from the surrounding parts, applies another pair to the highest part of its insulated portion, for the purpose of fixing it firmly, and at the same time twists the denuded portion of the artery with the first forceps from three to eight times in succession, according to the size of the vessel.

" M. Amussat employs in the operation two pairs of forceps of very complicated construction, each furnished with a contrivance by which he can keep them firmly closed. With one, he seizes the vessel, and withdraws it from the wound, for the purpose of thoroughly separating it from the surrounding veins and nerves; when this is done, he applies the second forceps, which have round even arms, upon the artery immediately above the extremity of the first forceps, and by making strong pressure upon the rounded arms he thus divides the internal and middle membranes; and when it is probable that he has effectually succeeded in this, he slides the second pair of forceps along the insulated portion of the artery, until he reaches that part of the vessel, which has not been denuded, and thus reflects or pushes the two internal tunics before the instrument. Having carried the second pair of forceps as far as this point, M. Amussat then mentions their firm and steady application, at a distance of at least four or six lines from the first pair, which have been already fixed upon the extremity of the artery,—with the latter, he then torts the cellular tunic, (the only membrane which has resisted the bruising or scraping action of the rounded forceps,) five or six times in succession.

" By these various plans of twisting arteries, any discharge of blood from the vessel is immediately arrested, by the plug formed of the ruptured internal and middle tunics, (Pl. II. Fig. 9, *a*,) when it is performed according to MM. Velpeau's and Thiorry's plan, or by an inversion in the artery of the same parts, for a length of three or four lines, (Pl. II. Fig. 12,) when Amussat's mode is adopted. Under both circumstances, the cellular membrane, the only one which is in reality twisted, forms below the plug or the membranous inversion, a kind of *cul de sac*, (Pl. II. Fig. 9, *b*; ib. Fig. 12. *e*,) which, by slightly pressing against the obstacle which resists the escape of the blood, is capable, when necessary, of preventing its discharge; should it happen that, by insinuating itself through the debris or portions of the internal and middle tunics, it passes beyond the impediment which these fragments oppose to its progress, or, if after torsion has been made according to M. Amussat's mode, a portion of the sanguineous column passes into the canal which is formed by the inverted membranes. (Pl. II. Fig. 12. *a*.) In this, as in the former instance the flow of blood from the artery would be impeded by the portion of cellular membrane which forms the *cul de sac* described. (Pl. II. Fig. 12. *c*; ib. Fig. 9. *b*.)

" It thus appears, that, when torsion has been well executed, hemorrhages are successfully and with certainty arrested; but this is not the true point of view in which the operation ought to be regarded; for if the only object in view were that of producing an immediate stoppage of the discharge, nothing could better fulfil this indication than the judicious application of a ligature of any kind, either large or small. The real question to be determined is, whether consecutive hæmorrhages are less frequent after the use of torsion, or the application of ligatures of the most advantageous nature and form. Those surgeons who have advocated its use, have most strongly insisted upon the correctness of this opinion. M. Amussat, especially, thinks that torsion possesses great advantages over the ligature; because, he says, when it is used, no foreign substance is left in the wound: the consequence is, that the consecutive inflammation and suppuration amount almost to nothing, and, therefore, the cicatrization of the parts takes place much more rapidly than when a ligature is applied: unfortunately, these favourable consequences of the torsion of arteries have not been always observed. Several surgeons assert that they have noticed that inflammation and suppuration extend and continue a much greater length of time when torsion has been used, after the performance of an amputation, than in cases nearly similar when the ligature was applied; others mention the occurrence of hemorrhages, almost immediately after the operation, and thus the anticipations which this proposal appeared to induce, are in reality destroyed.

" M. Velpeau, however, who, as we have stated, was one of the first to adopt its use, and the extent of whose talents every one appreciates, states that torsion is not applicable in every case, and that in none does it possess a real advantage over the ligature. I have never employed this hæmostatic remedy in the human subject; but I have performed numerous experiments upon dogs and rabbits for the purpose of comparing it with the ligature, upon the large, or at least upon vessels of medium size. The inflammatory action and suppurative process have been more violent and of longer continuance than when an artery of similar dimensions had been tied, and the reason, I think, appears evident.

" In the first place, the manual operation of torsion is more difficult and painful than that of applying a ligature. Indeed, if it is wished to practice torsion upon the continuity of an artery, the same precautions must be used in laying it bare, which have been exhibited when describing the general rules for the application of the ligature, with the exception, that, in the latter case, so soon as the vessel is exposed, it is only further necessary to separate it for a short distance to apply the thread, and the operation is concluded. But, on the contrary, if it is intended to perform torsion, the artery having been exposed, several painful and tedious manipulations have still to be executed,—the section of the artery with the bistoury, and the insolation and torsion of its divided extremities; it is proper to say, however, that no one has insisted upon the use of torsion in those cases wherein the continuity of the vessel remains undisturbed.

"We shall now examine whether this operation, or that of applying a ligature after the amputation of the extremities, or the extirpation of tumours, is performed with the greatest ease: in either method the vessel must be seized and insulated. When the ligature is to be applied, the separation is made sufficiently extensive by merely exercising upon the artery a slight degree of traction, but when torsion is employed, a greater degree of traction is required than that which the ligature demands, so as to make the vessel project five or six lines at least, beyond the fleshy parts; and as this attempt invariably draws the veins and nerves by which it is accompanied along with the artery, it becomes necessary to separate and turn them back towards the superior parts, for the sole purpose of twisting the artery, a precaution which the ligature does not always require, and which it is unnecessary, in any case, to carry to that extent which torsion demands.

"After the separation has been effected, torsion still remains to be performed. From what has been said, the operation of torsion is proved to be longer, as well as more difficult and painful, than that of the ligature: the only exception to this occurring in its applicability to the smaller arteries. And if it be acknowledged, as the most talented practitioners admit, and as it appears to me to have been most minutely demonstrated, and all other circumstances being equal, there is greater probability of success when the distance between the situation of the ligature and the origin of a large collateral branch is considerable, that when it is small, the conclusion must necessarily be drawn, that torsion is not so valuable as the ligature, because it destroys the parietes of a vessel for a much greater length, and therefore proportionally diminishes the strength and length of the coagulum. For instance, if the temporal artery be wounded two inches below the profunda, and a ligature be applied immediately above the wound, a distance of twenty or twenty-two lines, which experience proves sufficient for the formation of the coagulum, will remain between this point and the large collateral branch: whilst, if torsion be used in the same part, fifteen or eighteen lines only will remain in which this process can be effected. Should the wound be situated still nearer a collateral branch, the objection has still greater weight, because it has been proved that the coagulum is not formed in such manner as to fill the artery, except when the interspace between the ligature and the first branch, upon the side which is nearest to the heart, equals eight to ten lines in length.

We shall now examine whether the immediate disadvantages which have been described as the results of this mode of operation, the torsion of an artery, are compensated by equivalent and ultimate benefits. This is far from being the case. We have already seen that the inflammation and suppuration are always as tedious, and sometimes even more so, after torsion, than after the application of the ligature, and the causes of this it is not difficult to deduce. The first consists in the duration of the operation itself; the second, and one of the most serious, is the displacement which an artery suffers in its proper sheath, when the traction which is necessary for its due insolation is performed; and lastly, the third is attributable to the presence of a real foreign body, capable, perhaps, of exciting a greater degree of inflammation than the single thread which is used as the ligature. The extremity of the twisted artery, and the fragments of its internal and middle membranes, constitute this foreign body; these portions of the vessel being seriously bruised by the torsion, maintain no vital connection with their surrounding tissues, are unable to form any adhesion with them, and can only be removed by the double effect of suppuration and absorption. Until this effectually take place, the fragments of the arterial parietes excite as extensive a degree of inflammation and suppuration as is produced by the knot of the ligature, until it is entirely expelled; and I assert, that whenever I have applied the ligature upon the principal artery of one extremity, and used torsion upon the corresponding vessel of the other, I have nearly always observed that the wound cicatrizes more readily in the former than in the latter instance.

"When torsion is performed upon the small vessels, the same disadvantages do not arise as in those just described; in the first place, because the operation requires less particularity, and secondly, because vessels of this class have not, like the large arteries, a proper and distinct sheath; and hence, if the same degree of traction be exercised upon them, the inconvenience produced by any considerable separation from the surrounding parts does not arise; lastly, the size of the extremity of the twisted artery is very small, and as it is necessary for arresting the hæmorrhage, that torsion should be performed but three or four times, their vitality may still remain; and consequently, this portion of the vessel, although it is the substitute for a foreign body, does not act as a cause of suppurative inflammation,—the effect of torsion when employed upon an artery of considerable magnitude.

"Although I acknowledge the benefits which the surgeons, who have suggested and put in practice the torsion of arteries, have conferred upon science, by enriching it with an additional method of arresting hemorrhages, yet the considerations just detailed, in addition to those which have been previously given, enable me to assert, that whenever this mode is employed it ought always to be adopted with great reserve, and that it should never be used upon the large arteries."

From the whole inquiry, and a careful view of all the facts and arguments, the author draws the following general deductions.

"1. It is necessary towards effecting the obliteration of an artery, that the transmission of the blood through its interior should be entirely suspended.

"2. This obliteration is accomplished with greater rapidity and less danger by dividing the internal and middle tunics, than by preserving their integrity.

"3. The closure of an artery is more facilitated by the clean and regular section of the internal and middle membranes, which is produced when a small round thread is used as the ligature, than by the broken and irregular division formed by the application of a flat and broad ligature, whether large or small.

"4. The means which nature adopts in permanently closing a vessel upon which a ligature has been applied, are of two kinds: 1. The adhesion of the parietes of the vessel to each other: 2. The formation of a coagulum of blood, which, so soon as it is sufficiently large to fill the vessel, becomes adherent to its internal surface.

"5. As the phenomena which immediately succeed the operation of applying a ligature upon an artery, and must continue until obliteration is perfect, all other things being equal, bear a direct ratio to the vitality of its parietes, it is of the utmost importance that the surgeon do not insulate the vessel to a greater extent than is absolutely necessary for placing the thread around it, in order that their vitality may not be diminished.

"6. The adhesion of the parietes of an artery to each other, can only occur when its tunics enjoy their vital properties; when these are extinct, no adhesion is procured, and when they are reduced it is very feebly formed.

"7. No coagulum is formed in a tied artery when the ligature is placed very near a large collateral branch, if it arise from the side nearest to the heart.

"8. The means which nature, in the first instance, uses for the prevention of hemorrhage, after the decidence of the ligature, such as, adhesion of the opposite parietes of the artery, or the agglutination of the lips of the divided internal and middle tunics, when a section of these have been made, are invariably destroyed, either totally or partially, by the suppuration which takes place to detach the ligature.

"9. The base of the secondary coagulum, generally in contact, and adherent more or less with the agglutination of the arterial parietes, is also almost invariably disorganized and destroyed by the same suppuration; and would thus be displaced, and give rise to an immediate hemorrhage, if it were not of a certain length, or if the union formed with the arterial parietes were not sufficiently powerful to resist the impulsion of the blood. When the ligature is applied too near a collateral branch, the formation of the coagulum is either too small or altogether prevented, and when the membranes are diseased, or the vessel has been teazed and too extensively insulated during the operation, the union with the arterial parietes is either destroyed altogether or very feeble in character.

"10. The adhesion which has been once established, is capable of being destroyed by an extension of the suppuration from the surrounding parts and surface of the artery towards its centre.

"11. The entire substance of the coagulum itself may be destroyed, if the inflammation is very active, and even before the separation of the ligature.

"12. Under these circumstances, if a considerable space is not found between the superior portion of the coagulum, (the base of which has been destroyed,) and the origin of a large collateral vessel, hemorrhage will inevitably take place: on the contrary, a new coagulum will be formed, and pass through the same changes as the first, if its developement be not arrested.

"13. The principal causes of suppuration, which entail consequences so serious, are the length of time occupied in the operation, the manipulation of the surgeon when ascertaining the various organs with which he is engaged, the bruising of these parts, the insulation of the artery for too great an extent, or even its mere disturbance for a short distance by locomotion in its proper sheath, and, lastly, the nature and size of the body which is left upon the artery or within the wound. Independently of these physical and material causes, others sometimes occur which are connected with the permanent or temporary state of the individual upon whom the operation has been performed, and which it is frequently impossible to appreciate.

"14. From what has just been advanced respecting the causes of suppuration, and the remarks made in the third corollary, it must be inferred, that round and small ligatures ought to be preferred to those of every other kind.

"15. Whatever be the nature of the ligature applied, it is never absorbed: should the external wound cicatrize before it escapes, consecutive abscesses always take place until it has been expelled.

"16. The mere division of the internal and middle tunics by a small ligature is insufficient to obliterate an artery: it is still necessary that its application should be continued upon the vessel, for the purpose of maintaining the lips of the section in apposition, and supporting the primary rudiments of the coagulum. (Pl. I. fig. 11.)

"17. When the internal and middle tunics of an artery have been divided, the continuance of the ligature upon an artery, though maintained for some hours, is in the human subject incapable of effecting its closure: in animals, even as for instance in dogs, in whom the blood possesses great plasticity, union is only very rare. On the one hand, the adhesion of the arterial parietes to each other is so feeble in the first five or six hours subsequent to the operation, and on the other, the coagulum is so small, that the impulsion of the blood and disturbance of the parts, which the retraction of the thread occasions, displaces the one, and destroys the other.

"18. When a coagulum is displaced and carried away by the column of blood, its size is rapidly diminished in consequence of its motion in the artery, and if its attachment in the interior be such that a portion of blood can glide between it and the artery, it is soon reduced by repeated friction. If, on the contrary, it fill the artery entirely, or occupies a collateral branch, these vessels become obliterated.

"19. It is a longer and more difficult operation effectively to employ torsion in a large artery, than to apply a ligature upon it.

"20. When torsion is employed, traction must be performed upon the vessel so as to insulate it for six or eight lines: this displacement extends at least as far as the first large collateral vessel, the continuity of the vessel with its proper sheath, is thus broken throughout its entire length; and unpleasant consequences as we have seen result. This separation is of no importance in the smaller arteries, because they have not a very distinct sheath, and further, because they usually give off more branches in a given length of vessel.

"21. In consequence of the bruising and trituration which torsion occasions in the arterial parietes, some portions of its component membranes are destroyed and deprived of vitality. These become a cause of inflammation, which in addition to the longer and more painful manipulations of the torsion than of the ligature, terminate in producing a suppuration which is equally as great and lasting as that which can be caused by the application of a ligature.

"22. When an artery is divided at a short distance from a large collateral branch, which is situated between this and the heart, torsion is less effective than the ligature, because it destroys the artery to a greater extent, and, consequently, diminishes in proportion, that space which is necessary for the formation of the coagulum.

"23. The disadvantages arising from torsion, are not so great in small as large arteries.

"24. When an artery is ossified or cartilaginous, the formation of coagulum only must be calculated upon for effecting its closure. If that portion upon which the operation has been performed is near a collateral branch, the operation will not succeed. In this instance, the ligature should be applied above it, or the branch should be tied at the same time with the trunk. This rule may be applied with equal advantage when tying arteries which are not diseased.

"25. When hemorrhage ceases spontaneously, after the complete division of an artery, the surgeon will take care to remove all the causes which might disturb the formation and organization of the coagulum, and, to abstain from every kind of operation, at least, so long as he believes that the propinquity of a large branch with the wounded part is not such as will prevent the developement of the coagulum: under these circumstances, the artery must be denuded, and a ligature applied above the collateral branch.

"26. When an artery has been opened, either longitudinally or transversely, although hemorrhage may have spontaneously ceased, the surgeon must invariably lay the vessel bare, and tie it, because in these instances, as the coagulum is situated externally to the artery, the closure is only temporary."—Pp. 107–111.

ART. VI.—*Lectures on Anatomy, interspersed with Practical Remarks*, Vol. IV. By B. B. COOPER, F. R. S., Surgeon to Guy's Hospital, Lecturer on Anatomy, &c. &c. &c. London, 1832. Pp. 383. 8vo. Four Lithographic Plates.

THE present volume, which forms the conclusion of the work of Mr Bransby Cooper, we notice chiefly for the purpose of saying, that it fully realizes the opinion already expressed of the three by which it was preceded.

It contains the descriptive anatomy of the arteries, veins, and lymphatics, explained in four lectures, constituting the seventh part; the general physiology and descriptive anatomy of the nervous system in six lectures, forming the eighth part; and lastly, the descriptive anatomy of the organs of sensation in four lectures, constituting the ninth and concluding part of the whole treatise.

The mode in which Mr Cooper has treated these subjects, is well calculated to convey to the student a distinct and just conception of the present state of anatomical knowledge. The anatomical descriptions are given separately from the physiological and surgical observations; and the author, though always desirous to show the applications of anatomical facts, never, however, sacrifices the cause of method and precision in anatomical description. In the twenty-seventh lecture we find an interesting view of the pathology of the arterial system, and short sketches of the modes of operating on the different arteries of the human body.

The eighth part, on the anatomy of the nervous system, is preceded by a useful and instructive view of the functions of that part of the economy, as established by the best experiments and observations. A slight mistake is committed in ascribing to the late Dr Bennett observations made by Professor Tiedemann of Heidelberg, in order to illustrate the successive developement of the different parts of the brain in the foetus. The late Dr Bennett merely translated the work of Professor Tiedemann from the French translation; and, we presume, in this manner sometimes has received credit for researches which were first performed by the Heidelberg professor. It is not impossible that Dr Bennett may have repeated some of these experiments; but, as many others have since done the same partially, this is no sufficient reason for allowing him the merit of rectifying the errors of Gall and Spurzheim.

Mr Cooper gives some valuable facts illustrating the organization of the brain, from the researches of M. Foville of Rouen.

The peculiarity of these views consists chiefly in tracing the *corpora restiformia* to the *cerebellum*, the *corpora olivaria* to the *tubercula quadrigemina*, and the *corpora pyramidalia*, or anterior pyramidal bodies, to the brain. The first circumstance, which may be easily demonstrated, has been known since the time of Vieussens, and was again, after being overlooked, revived by Reil and Tiedemann. The second is matter of opinion, and may or may not be the case. The third circumstance is, to a certain extent, perfectly well founded, since the fibres of which these bodies are composed may be traced through the *pons varolii* into the *crura* of the brain, and part of the optic chambers.

So far, therefore, as we understand the views of M. Foville, we can perceive nothing new, unless in the account which he gives of the formation of the *corpus callosum*, which he represents to be formed by the *corpora pyramidalia* ascending from the *corpora striata*, and forming a conjunction on the median plane between these bodies. Even this arrangement is partially alluded to, though perhaps not completely developed, by Reil. We must nevertheless observe, that the views of M. Foville are well exhibited in the figures of the first and second engravings.

The descriptive details of the different parts of the brain are very accurately given by Mr Cooper; and we may refer the reader both to this and to that of the nervous chords, for a just view of the distribution of this important part of the animal body.

In the ninth part, on the organs of the senses, the uses of their parts, the theory of their operation, and the diseases to which they are liable, are explained in an able and instructive manner.

Upon the whole, we sincerely congratulate the English student on now possessing a complete system of anatomy, exhibiting a just view of the state of the science in the present day.

ART. VII.—*A Demonstration of the Nerves of the Human Body, consisting of Four Parts.* By JOSEPH SWAN. Part III.—The Cerebral Nerves. London, 1833.

IN this part of his splendid publication, Mr Swan continues to maintain the character originally given of his researches, as an able and sucessful neurographer.

The part contains six very beautiful shaded engravings, with an equal number of outline sketches for the purpose of illustrative reference. All the figures are of the natural size; and they are so faithfully represented as to bear ample testimony to the anatomical skill and dexterity, as well as the graphic taste and judgment, of the indefatigable author.

The tenth plate, with which the present work commences, presents nine very excellent figures. The first gives the usual appearance of the parts in the base of the brain; the second, a lateral view of the annular protuberance, shewing the origin of the fifth cerebral nerve; the third shows the olfactory, the optic, the optic tracts, and *crura*; the fourth, the ultimate origin of the fifth in the restiform body; the fifth, the origin of the superior oblique, fourth cerebral, or trochlear nerve; the sixth, the origin of the filaments of the nerves at the superior extremity of the spinal chord; the seventh, the origins of the oculo-muscular nerve from the *crura*; the eighth, another view of all these parts in connection, from the olfactory to the posterior or ultimate origins of the fifth, and those of the pneumogastric and glosso-pharyngeal; and the ninth presents a particular view of the origins of the pneumogastric and glosso-pharyngeal nerves from the bulb of the chord.

The eleventh plate also contains nine figures, illustrating a variety of points relating to the transition of the cerebral nerves out of the cavity of the cranium.

The first figure exhibits a general view of the several cerebral nerves as they are descending by the cranial apertures to their different destinations. The second, third, and fourth, represent most beautifully and accurately the transitions and distributions of the filaments of the olfactory or first pair of nerves in the ethmoid and turbinated bones, with their communication with the spheno-palatine ganglion. The fifth gives a view of the retina; and the sixth, the lenticular ganglion and ciliary nerves. In the seventh and eighth there are views of the auditory nerves entering the *cochlea* and vestibule, and their connection with the facial and vidian nerves. And the ninth represents the branches of the facial proceeding to the *tensor tympani*, and the *stapedius* or muscle of the stirrup-bone.

The twelfth engraving is chiefly devoted to the illustration of the distribution of the branches of the fifth or tergeminal nerves, with their manifold and intimate communications with the sixth, the facial, the pneumogastric, and the glosso-pharyngeal; and this it does most admirably by seven beautiful and accurate figures.

Our limits will not permit us to enter into the minute details of these figures. But we must say, that the anatomical student may here most advantageously study the supra-orbitary branches of the ciliary and lacrymal nerves, the dental branches of the superior and inferior maxillary, the sublingual, the submaxillary, and the gustatory twigs of the glosso-pharyngeal. We may also observe, that the second figure of this plate gives a very good view of the serpentine flexure of the internal carotid, and its connection with the cerebral arteries.

The thirteenth plate presents only one engraving, representing the superficial distribution of the filaments of the lateral facial nerve, and their connection with the tergeminal.

The fourteenth contains eight figures, illustrating the deeper seated distribution of the facial, and its connections with the fifth, the twigs of the muscular apparatus of the tympanal cavity, those of the muscles of the eyeball, and the spheno-palatine ganglion and its branches.

The fifteenth is devoted to the illustration of the most intricate department of the neurotomy of the head, facial cavities, and neck, and exhibits in seven figures, the relative position of the pneumogastric, glosso-pharyngeal, and ninth nerves, the cervical ganglion of the great sympathetic, the laryngeal and gustatory nerves, various views of the lenticular ganglion, the Vidian nerve and its branches, and the spheno-palatine ganglion and its filaments.

The sixteenth plate, containing seven figures, is devoted to the more minute and detailed exposition of the pharyngeal plexus and its nerves, the glosso-pharyngeal, and the particular distribution of the superior and inferior laryngeal nerves.

We have already expressed our opinion of the merits of this work, as illustrating our knowledge of a most important department of anatomy. We have only to add, that, when completed, it promises to maintain a high rank as a work on neurography; and cannot fail to procure for the author, the character of a most diligent and enthusiastic cultivator of science. The present may be regarded as one of the most disinterested tasks which has for a long time been undertaken in this country; for the labour and expence incurred by the author is by no means likely to be soon compensated by any pecuniary advantage which it can afford.

It is therefore the more meritorious in Mr Swan, that, undismayed by this consideration, and apparently from a disinterested attachment to anatomical science, he has exerted himself with such perseverance and diligence in providing the English student with an original series of engravings, which though perhaps not quite equal, as works of art, to those of Scarpa, have, nevertheless, the advantage of them, in giving complete views of the anatomy of the whole nervous system, and even in supplying some of the defects of that celebrated neurographer.

Art. VIII.—*Pathological Anatomy. Illustrations of the Elementary Forms of Diseases.* By Robert Carswell, M. D., Professor of Pathological Anatomy in the University of London, &c. &c. Fasciculus First,—Tubercle. London, 1833.

Dr Carswell is known to have cultivated the subject of morbid anatomy with peculiar assiduity for many years, and to have formed one of the most extensive and varied collections of delineations, coloured after nature, of specimens of morbid anatomy extant in this country, or perhaps in any other. He is further well known to unite with the requisite anatomico-pathological knowledge a most happy talent of embodying in the most accurate and vivid manner the striking and characteristic features of morbid changes of the different tissues and organs of the animal body. These circumstances concur to make Dr Carswell be very generally, if not universally, esteemed as peculiarly well qualified to illustrate in this manner the great and fundamental principles of the science of pathological anatomy.

The expectations thus naturally entertained, the appearance of the present specimen of the proposed publication shows that Dr Carswell will perfectly realize. It is devoted to the elucidation of the anatomical and physical characters of *Tubercle*, and its distribution and occurrence in the different textures of the human body.

The appearance of these bodies in the lungs and bronchial tubes is most beautifully and faithfully represented in four well-coloured figures in the first plate. In the second plate they are exhibited in the womb and *vagina*, in the Fallopian tube and ovaries, in the kidney and liver. The third exhibits their usual appearance in the intestinal tube, and in the brain and *cerebellum*. And in the fourth are seen various specimens of lung infiltrated and solidified by the general deposition of tubercular matter, and several examples of tubercular excavations.

Viewed as specimens of accurate drawing and natural colouring, these lithographic sketches are extremely perfect; and we think we may confidently say, that England has at length produced lithographic drawings equal in nicety and delicacy to those of our foreign neighbours, and in all the other qualities of accuracy of delineation and colouring, superior to any thing which we have yet witnessed. It is no ordinary merit that Dr Carswell is the first British artist who has made the lithographic style approach in delicacy and clearness the precision of copperplate engraving. His application of a method so perfect and so economical to the diffusion of correct pathological knowledge, is a further service which places medical science under deep obligations to him.

On the peculiar mode of arangement adopted by Dr Carswell, we feel that it would not, in the present stage of his publication, be fair to make much criticism. To commence with tubercle the illustration of a subject like morbid anatomy, seems, according to our usual ideas of that science, rather singular; and we honestly confess, that we should not have thought of this mode of expounding the first principles of the subject. Dr Carswell, however, conceives, that, by adopting this method, he is enabled, with peculiar facility, to develope the plan announced in the prospectus, and to illustrate more successfully the elementary forms of disease. It can only be therefore, when the work is well advanced, or very nearly completed, that it is possible to form any decided opinion on the merits of the method. This, however, is to a work of this kind a matter of indifference. There may be some advantage in selecting changes of structure so obvious and impressive, in order to explain the first principles of a science, which is entirely devoted to changes of structure, while the less conspicuous changes may be explained more clearly, and comprehended more perfectly, by contrast with the former.

The opinions of Dr Carswell on the nature and character of tubercle, if singular, are at the same time not void of interest. He represents it to be by far the most frequent in the mucous system, and especially that of the lungs, in the intestinal glands, the mucous part of the liver, of the seminal vesicles, kidneys, &c. We are not prepared to say that this corresponds with personal observation. But on this point we willingly defer to one who has so long and so carefully investigated the subject, as we have good reason to know the present author has done. Dr Carswell admits, however, the distribution of tubercular matter in the cellular tissue, and in the serous membranes, the situation certainly most usually remarked in this country, and also in the lymphatics, both in their course and in their transit through the lymphatic glands.

The observations on the configuration or form which tubercular matter assumes seems, according to Dr Carswell, to be modified by the individual tissue or organ in which it takes place. Thus in the brain and in the cellular tissue, in which the structure is homogeneous, and nearly equally resistent, the tubercular deposit assumes a figure more or less globular. It takes the form of a shut or open globular sac if confined to the secreting surface, and of a solid globular tumour of various sizes if it fills completely the cavity of the air-vessels; and in the bronchial tubes it affects the tubular or cylindrical shape, taking a ramiform distribution, and terminating by a cauliflower or peduncular and expanded arrangement in the air-cells. In the biliary ducts and pores of the liver its distribution is racemiform, and it expands into bulbous extremities, as is accurately represented in the sixth figure of the second plate.

Dr Carswell, who regards tubercular matter as a substance deposited in various organs, either semifluid or a little consistent, especially where the tissue of the affected organs is so firm as to resist its deposition mechanically, considers it as secreted from the blood *previously modified*, that is, we presume, diseased. He appears, however, to admit along with this a diseased state of the membrane in which it is deposited.

He does not admit the softening to depend on any change originating in the morbid deposit, but maintains that it irritates the tissues subjected to its influence,—that it becomes thereby infiltrated by an admixture of serous or purulent fluid, or blood effused from the irritated parts,—that these fluids loosen, or detach its mutually coherent particles,—and that in this manner it is eliminated in a disrupted form from the sites which it occupied.

He also, in consistence with these views of the progressive changes of tuberculous matter, maintains the possibility of tuberculous diseases being cured. There is in this view nothing unreasonable or inconsistent with facts; but unhappily the process of softening is in general so tedious, so general, and so successive, that it almost invariably, if seated in any of the internal or vital tissues, terminates the existence of the individual in whom it appears. In the case of an entire lung being occupied by tubercular deposit, which is very generally the case, it is not the softening process that brings about the fatal termination so certainly and so steadily as the interruption of the function of respiration, and the general lesion of the circulation of the organ.

In conclusion, we have only to observe, that these engravings promise to be a valuable acquisition to the pathological student; and they are particularly recommended to general circulation, not only by their beauty, and the ability with which they are executed, but by the extremely moderate price at which they are offered. It is certainly the cheapest work of the kind hitherto published in this country; and we confidently hope that Dr Carswell's encouragement will be adequate to the valuable service which he is now rendering the profession.

PART III.

MEDICAL INTELLIGENCE.

ANATOMY AND PHYSIOLOGY.

On the Structure of the Human Placenta, and its connection with the Uterus. By Robert Lee, M. D. F. R. S., &c. (*From the Philosophical Transactions. London,* 1832.)—In this paper, Dr Lee has investigated the minute structure of the placenta with great care, and shown that the representations and descriptions of that organ by John and Dr William Hunter, which have been adopted by all British anatomists and accoucheurs, were admitted on inadequate grounds.

It is pretty well known that the researches of these anatomists were believed to establish three points; 1*st*, the fact of a vascular connection between the inner surface of the *uterus*, and the rough surface of the placenta, by means of arteries proceeding obliquely, but without further ramification into the placenta; 2*d*, that the placenta consists of two distinct parts, a uterine or maternal, and an umbilical or fœtal, separate from each other, and each having a peculiar set of vessels; and 3*dly*, that between these two parts there was an assemblage of cells, or communicating cavities, in which the arteries of the uterine portion were represented to terminate, and the veins to arise; and from which the vessels of the umbilical or fœtal portion were conceived to convey the uterine or maternal blood by a species of imbibition.

The enquiries of Dr Lee have shown all these inferences are extremely doubtful, if not positive misrepresentations.

"On cutting into the placenta, he discovered in many places of its substance yellow injection, and in others red, and in many others these two colous mixed. The substance of the placenta, now filled with injection, had nothing of the vascular appearance nor that of extravasation, but had a regularity in its form which showed it to be naturally of a cellular structure, fitted to be a reservoir for blood.

"From these appearances Mr Hunter infers, 'that the arteries which are not immediately employed in conveying nourishment to the uterus go on towards the placenta, and proceeding obliquely between it and the uterus, pass through the decidua without ramifying. Just before entering the placenta, after making two or three close spiral turns upon themselves, they open at once into its spongy substance without any diminution of size, and without passing behind the surface as above described.

"'The veins of the uterus appropriated to bring back the blood from the placenta, commence from this spongy substance by such wide beginnings, as are more than equal to the size of the veins themselves. These veins pass obliquely through the decidua to the uterus, enter its substance obliquely, and immediately communicate with the proper veins of the uterus. This structure of parts points at once to the nature of the blood's motion in the placenta. The blood detached from the common circulation of the mother moves through the placenta of the fœtus, and is then returned back into the course of the circulation of the mother to pass on to the heart.' (Observations on certain Parts of the Animal Œconomy, page 127.)

"'Dr William Hunter's description of the vascular connexion between the uterus and placenta coincides with that of his brother: 'for it seems incontestable (he observes) that the human placenta, like that of the quadruped, is composed of two distinct parts, though blended together; viz. an umbilical, which may be considered as a part of the fœtus, and an uterine, which belongs to the mother; that each of these parts has its peculiar system of arteries and veins, and its peculiar circulation receiving blood by its arteries and returning it by its veins; that the circulation through these two parts of the placenta differs in the following manner:—in the umbilical portion the arteries terminate in the veins by a continuity of canal, whereas in the uterine portion there are intermediate cells, into which the arteries terminate, and from which the veins begin.' (Anatomical Description of the Gravid Uterus, London, 1794, page 48.)

"It is a singular fact, that these celebrated anatomists should both have asserted their claims to the merit of what they supposed to be the discovery of the true structure of the human placenta, and its connexion with the uterus, and that their controversy on this subject should have loosened those bonds of affection which had united them together from their earlier years.

"Noortwych, Rœderer, and Haller, had previously investigated this subject by injecting the blood-vessels of the gravid uterus: their researches however did not determine, in a satisfactory manner, that a vascular connexion exists between the uterus and cells in the placenta. The opinions of the Hunters were generally acquiesced in at the time they were promulgated, and their accuracy has not been called in question by any anatomist of reputation in this country for the last forty years.

"If an incision be made through the parietes of the gravid uterus, where the placenta does not adhere, the membrana decidua will be observed lining the internal surface, and numerous minute blood-vessels and fibres passing from the inner membrane of the uterus to the decidua. At the circumference of the placenta, the membrana decidua separates from the chorion and amnion to pass between the uterus and placenta, and thus forms a complete membranous septum, which is interposed betwixt these organs. The chorion and amnion cover the fœtal surface of the placenta; and between these two membranes and the decidua lie the ramifications of the umbilical vein, and arteries subdivided to an almost indefinite extent, and connected together by white slender filaments running in various directions. The placenta thus consists solely of a congeries of the umbilical vessels, covered on the fœtal surface by the chorion and amnion, and on the uterine surface by the deciduous membrane, and inclosed between these membranes; it adheres to the fundus, or some part of the uterus by innumerable flocculent fibres and vessels.

"On detaching the placenta carefully from the uterus, the deciduous membrane is found to adhere so closely to the umbilical vessels which it covers, that it is impossible to remove it without tearing these vessels. With the fibres uniting the placental decidua to the uterus are mingled numerous small blood-vessels, proceeding from the inner membrane of the uterus to the decidua; and these vessels, though more numerous at the connexion of the placenta with the uterus, exist universally throughout the whole extent of the membrane. There is no vestige of the passage of any great blood-vessel, either artery or vein, through the intervening decidua, from the uterus to the placenta; nor has the appearance of the orifice of a vessel been discovered, even with the help of a magnifier, on the uterine surface of the placenta. This surface of the placenta deprived of the deciduous membrane presents a mass of floating vessels, its texture being extremely soft and easily torn; and no cells are discernible in its structure, by the minutest examination.

"At that part of the surface of the uterus to which the placenta has been adherent, there are observable a great number of openings leading obliquely through the inner membrane of the uterus, and large enough to admit the point of the little finger: their edges are perfectly smooth, and present not the slightest appearance of having been lacerated by the removal of the placenta. In some places they have a semilunar or elliptical form, and in others they resemble a double valvular aperture. Over these openings in the inner membrane of the uterus, the placenta, covered by deciduous membrane, is directly applied, and closes them in such a manner that the maternal blood, as it flows in the uterine sinuses, cannot possibly escape either into the cavity of the uterus, or into the substance of the placenta. The above appearances on the inner surface of the uterus have been accurately represented by Rœderer; from whose work fig. 1. of Plate I. is taken.

"When air is forcibly thrown either into the spermatic arteries or veins, the whole inner membrane of the uterus is raised by it; but none of the air passes across the deciduous membrane into the placenta, nor does it escape from the semilunar openings in the inner membrane of the uterus, until the attachment of the deciduous membrane to the uterus is destroyed. There are no openings in the deciduous membrane corresponding with these valvular apertures now described, in the internal membrane of the uterus. The uterine surface of the placenta is accurately represented in fig. 2. Plate I.

"If a placenta be examined which has recently been separated from the uterus in natural labour, without any artificial force having been employed, its surface will be found uniformly smooth, and covered with the deciduous membrane; which could not be the case, did any large vessels connect it with the uterus. The placenta in a great majority of cases is also detached from the uterus after labour, with the least imaginable force; which would be impossible if a union by large blood-vessels, possessing the ordinary strength of arteries and veins, actually existed. Besides, a vascular connexion of such a kind would be likely to give rise, in every case, to dangerous hemorrhage subsequent to parturition, a circumstance not in accordance with daily experience.

"Noortwyk, Rœderer, Haller, Dr W. and Mr J. Hunter, and Dr Donald Monro, do not appear to have examined the gravid uterus and its contents in the natural state of the parts, but after fluids had been forcibly injected into the hypogastric and spermatic arteries. The laceration of the deciduous membrane covering the orifices of the uterine sinuses followed this artificial process, as well as the formation of deposits of injection in the vascular structure of the placenta, giving rise to the deceptive appearance of cells. That this took place in the examinations made by Rœderer (Icones Uteri humani, Observationibus illustratæ. J. G. Rœderer, 1759,) and Monro (Essays and Observations, Physical and Literary, 1754, Vol. i.) does not admit of dispute; and the following facts render it more than probable that the Hunters were also misled, by the effects of artificial distension of the placenta, from the extravasation of the fluids forced into the uterine vessels.

"In the course of last autumn, the preparations of the gravid uterus in the Hunterian Museum at Glasgow were examined at my request by Dr Nimmo; and in none of them does it appear certain that any great blood-vessels pass from the uterus into cells in the placenta; but in many the deposits of injection, causing the appearance of cells, were observed evidently to be the result of extravasation. No preparation in the collection seems to have been expressly made for the purpose of proving or disproving the fact that the deciduous membrane passes over the uterine surface of the placenta; but in reference to preparation R. R. No. 139, it is observed by Dr Nimmo that no vascular openings are visible in the membrane interposed between the uterus and placenta.

"The facts which have now been stated warrant, I think, the conclusion, that the human placenta does not consist of two parts, maternal and fœtal, that no cells exist in its substance, and that there is no communication between the uterus and placenta by large arteries and veins. The whole of the blood sent to the uterus by the spermatic and hypogastric arteries, except the small portion supplied to its parietes and to the membrana decidua by the inner membrane of the uterus, flows into the uterine veins or sinuses, and after circulating through them, is returned into the general circulation of the mother by the spermatic and hypogastric veins, without entering the substance of the placenta. The deciduous membrane being interposed between the umbilical vessels and the uterus, whatever changes take place in the fœtal blood, must result from the indirect exposure of this fluid, as it circulates through the placenta, to the maternal blood flowing in the great uterine sinuses."

Such are the facts ascertained by Dr Lee, and the inferences deduced from them. Those with regard to the disposition of the veins of the *uterus*, and their alleged communication with the placenta, have been since that again investigated by Mr Owen, whose dexterity and accuracy as a practical anatomist is well known. This gentleman found, on dissecting under water a *uterus* with the *placenta* attached, and removing the uterine substance from the veins by successive slices, that in every instance the veins having reached the inner surface of the *uterus*, terminated in an open orifice in that aspect; the peripheral portion of the coat of the vein, or that next the uterine substance, ending in a well-defined or smooth semicircular margin, and the central part adhering to, and apparently continuous with, the decidua.

Mr Owen further observed, that where the veins of different planes communicated with each other, the central part of the *parietes* of the superficial vein invariably projected in a semilunar shape into the deeper seated one; and where two or three veins communicated with a deeper seated one at the same point, these semilunar edges decussated each other so as to expose a very small part only of the deep-seated vein.

In another uterus and placenta obtained from a woman who died about the fifth month of gestation, Mr Owen in like manner found the veins terminating in open semicircular orifices, which, however, were closed by the apposition of the *decidua* and *placenta*. The *decidua* was indeed thinner opposite these orifices than elsewhere; and in some parts was either wanting, or was torn up along with the vein. But in these circumstances, the minute vessels only of the placenta were recognized; and the placenta presented no indication of any vascular trunk or cell commensurate in size with that of the vein, the terminal end of which had been raised from the part.

We may add, that we have seen in the possession of Dr Lee a preparation of a recent *uterus*, in which these appearances were distinctly observed; and in which it was impossible to doubt that the open apertures of the uterine veins must have terminated abruptly on the deciduous membrane, and could not, by possibility, have been continued directly into the *placenta*.

It is remarkable, nevertheless, that several attempts have been made to defend the statements of the Hunters, and to show that the representations of Dr Lee are inaccurate. Those of Dr Burns of Glasgow, which are found in the Medical Gazette, are perhaps the strongest. But they do not affect the main point at issue, the direct or indirect transition of the *uterine* veins into the *placenta*. We must further, with all our respect for Dr Burns, be permitted to doubt whether it is possible, in a preparation still in a glass vessel, to determine a point of minute anatomy which so closely depends on accurate inspection.

It appears further that nothing but the high reputation of William and

John Hunter, with the patient imitative disposition, approaching to indolence, of British anatomists, has contributed to give this opinion the currency which it has so long and so generally maintained; and it is remarkable, that, while the doctrines of these eminent teachers on this point should have been implicitly adopted in this country, they were by no means so readily received abroad.

It is to be observed, that though Vieussens, Denys, Bonetus, Hunter, and Haller, have recorded instances of pregnant women being suddenly destroyed by hemorrhage and the vessels of the fœtus also empty, yet, on the contrary, in similar cases, Balthasar, Reuss, Wrisberg, and others, found the vessels of the fœtus well filled. In the lower animals, when destroyed by hemorrhagy in a state of pregnancy, the vessels of the fœtus have been found filled with blood.

From these circumstances, and from various other facts, the first Monro denied the direct communication of the uterine vessels with those of the *placenta*.—(Medical Essays and Observations, Vol. ii. p. 133, 134.)

From the experiments of Rœderer and personal inspection, Sabatier concluded that there is no proof that the vessels of the *uterus* anastomose or communicate directly with those of the placenta. He further maintains that the vessels of the womb and placenta are not continuous; and he infers that the maternal blood does not pass directly into the placenta.

Lastly, Dr Lee may be regarded, by the further examination of other four gravid *uteri*, as stated in his recent work, Part II. chapter I. to have completely determined the point, that the placenta does not consist of a maternal and fœtal part, contains no cells, and that there is no immediate communication between the *uterus* and *placenta* by large vessels.

Physiology of the Human Voice.—(*On the Organs of the Human Voice.* By Sir Charles Bell, K. G. H. F. R. S. *From the Philosophical Transactions, London,* 1832.)—In this essay Sir Charles Bell considers the influence of the windpipe, larynx, glottis, epiglottis, and pharynx, in contributing to the formation of the sound which constitutes the human voice, and explains with his wonted ingenuity and striking powers of illustration, the respective part which each performs in this necessary function. Sir Charles Bell strenuously denies that the *trachea* has any influence on the voice; and in opposition to Portal, who believes that its transverse muscular fibres, by which its area is diminished, and its diameter is lessened, gave force to the breath or speaking, contends that the chief use of these muscular fibres is to promote the expectoration of mucous and other fluids, because these fibres are wanting in birds which have very strong voices. The chief use of the trachea, he argues, in voice is to act as a *porte-vent*, or air tube; and its range in this respect is limited to the spot at which it is covered by the thyroid gland, which being soft and spongy, and compressed by the sterno-thyroid and sterno-hyoid muscles, suffocates or stops the sounds, so that the vocal organ of the human subject is compressed between this part of the windpipe and the throat. In short, Sir Charles Bell attributes to the thyroid gland the function of a *damper*, which stops or interrupts the progress of the sonorous vibration below it; and this consideration he maintains is illustrated by the effects of the elevation and depression of the larynx, the first of which lengthening the tube, produces the high notes, while the second, by which it is shortened, produces the graver sounds.

Sir Charles then gives very nearly the ordinary views on the function of the *glottis*, which is well known to perform the duty not only of regulating the admission and expulsion of air from the windpipe and bronchial tubes, but that of forming laryngeal or audible voice. He thinks, however, that the *sacculus laryngis* or ventricle of the larynx, must have considerable influence on sound, because one of its effects is to withhold the inferior ligament from the side of the tube, and to give its vibrations free scope, and because in several of the lower animals, for instance the howling ape, (*Simia Belzebub, Simia seniculus?*) the cells are particularly spacious and ample. There is little doubt that these powerful sounds, by which till sunrise these animals cause the American forests to re-echo, are produced in this manner. From the anatomical description given by Humboldt, who dissected them, this is placed beyond doubt.

Much of our knowledge on the motions of the human glottis, however, being conjectural, Sir Charles Bell avails himself of the effects of wounds to determine them. From these it results that at every inspiration the glottis is dilated, and that every audible sound is accompanied with a motion of the glottis as well as of the lips and teeth.

Besides these parts, however, the pharynx, the palatine *velum*, and the epiglottis, contribute powerfully to the formation and modification of the sounds of the human voice. Though the laryngeal sounds are formed by the glottis, their *timbre*, distinctness, and intensity are much influenced by the pharynx and the palatine *velum*. In a man, in whom the bones of the upper part of the jaw were destroyed so completely, that it was possible to see the motions of this curtain, Sir Charles Bell observed, that it was in constant motion during speech, and that when the patient pronounced the explosive letters, the *velum* rose convex, so as to shut the posterior nasal openings, and interrupt the ascent of the breath in that direction, and as the lips were parted, or the tongue separated from the teeth or palate, it recoiled forcibly.

"In speaking, much of the sound, as of the vowels and diphthongs, is the uninterrupted issue of the vocalized breath, modulated by the passages, and differently directed, but not checked or interrupted. The consonants are the same sounds checked by the tongue, lips, and teeth. At the moment of this interruption, the pharynx being distended is prepared to give an appulse by its muscular action, exactly in time with the parting lips."

"If we grasp the throat while speaking, so that the fingers embrace the bag of the pharynx, we shall feel that each articulate sound is attended with an action of the pharynx; and preceding each explosive letter we shall be sensible of a distension of the throat. By close attention to the act of breathing, we perceive that while the distended chest falls gradually and uniformly, the bag of the pharynx is alternately distended and impressed in correspondence with the articulated sounds.'

From these facts and considerations Sir Charles Bell maintains, that the pharynx and the *velum* are most important organs in producing what he denominates the *appulse* of the breath in speaking, that without its action consonants could not have been uttered, and must have been mutes, and that the same part has the chief power in modulation and accent.

There is little doubt that the pharynx and velum are essentially necessary to the formation of the guttural consonants K, G, and KH, or CH, or GH; and, according to Sir Charles Bell, M requires the sound to ascend into the nasal cavites by means of the elevation of the *velum*.

Some of these views make a near approach to those of Signor Bennati, who has written an ingenious memoir on the mechanism of the human voice, in which he shows the influence of the *velum* and *uvula*, in producing the high notes and falsetto notes. To the contents of this essay we shall advert in the next number.

MEDICINE AND SURGERY.

The Anodyne Metallic or Galvanic Brush, (Scopula Anodyna Metallica. Annales Scholæ Clinicæ Medicæ Ticinensis. Auctore FRANCISCO NOB. AB. HILDENBRAND, M. D. Papiae, 1830.) Under this name, Francis Ernest Von Hildenbrand, Professor of Pathology and Practice of Physic at Pavia, describes a remedy rather singular, for the cure of various neuralgic affections. It consists simply of a bundle of metallic wires, (*fascis e filis metallicis confectum,*) not thicker than common knitting wires, firmly tied together by wire of the same material, so as to form a cylinder about four or five inches long, and one inch or three-fourths of an inch in diameter. This is applied to the pained part, previously moistened with a solution of sea-salt, when it produces relief so instantaneous, it is said, that it appears to the patients like the effect of a charm. Occasionally the pain is immediately entirely extinguished, with the accompanying effect of a peculiar sense of emanation from the spot to which the brush is applied, causing the patients to believe that the pain is truly extracted by this method. On withdrawing the brush, the uneasiness occasionally returns, but in a more endurable form. The longer the application is continued, the more decided is the effect obtained; and phenomena so singular have resulted from its application, as even to astonish intelligent persons quite on their guard against any magical illusion.

In illustration of the remedial effects of this agent, Hildenbrand mentions the following case, which he designates as altogether singular and wonderful. A man of 30, a porter by occupation, afflicted with violent periodical *tic douloureux* of the face, (*metopodynia*,) was admitted into the Clinical Wards of Pavia. On applying the metallic brush over the left frontal nerve, the pain immediately disappeared from that one, but fixed on the corresponding nerve of the right side, which had been previously free from pain. The very moment at which the brush was removed from the left frontal nerve, the pain returned to its original seat, and there remained, though already remarkably abated in intensity. By applying a metallic brush to each supra-orbital nerve simultaneously, the professor banished the original nerve-ach of the left side, and at the same time prevented it from appearing in the opposite one. The same moment, however, a humming noise arose in each ear, and this also immediately ceased on the brushes being removed, when the nerve-ach returned immediately, though in a very mitigated form.

In order to obtain the desired effect from the use of the anodyne brushes, Professor Von Hildenbrand impresses the necessity of determining, as accurately as possible, the nature of the *neuralgia*, or the pathological state of the affected nerve. If the pain is merely *nervous*, that is, proceeding from subversion of the equilibrium between the *dynamic factors of the sensitive life*, as the Professor, in imitation of his father, expresses it, without material changes having taken place in the affected part, in which case it attacks periodically, like an intermittent disease, and leaves intermissions entirely void of pain,—then the efficacy of the metallic brush may be pronounced to be almost infallible. But if, from the pain being uninterrupted, or at least void of perfect intermissions, from its aggravation under pressure of the part, from the conjunction of redness, heat, and swelling, there is reason to believe that the proximate cause of any case of facial *neuralgia* or *hemicrania*, consists in a state of active congestion or sub-inflammatory irritation,—then the metallic brush affords no benefit, nay, sometimes may augment the intensity of the pain. By these means, Professor Hildenbrand thinks that the metallic brush, while it maintains at least a palliative therapeutic property in *neuralgia* of spasmodic character, may, in doubtful cases, furnish an auxiliary diagnostic sign, by the aid of which sub-inflammatory congestion may be distinguished from simple nervous erethism.

In the first experiments performed by Professor Hildenbrand, he employed brushes which were intentionally constructed of two kinds of metal, for instance, silver and copper wire, copper wire and zinc wire, or zinc wire and brass wire, the individual wires being mutually mingled and blended, on the supposition, that electricity or galvanism, evolved by the contact of heterogeneous metals, might be the beneficial and sanative agent. He afterwards ascertained, however, that bundles of wires of one and the same metal produced an effect scarcely less speedy, but lost their anodyne influence as soon as they were covered by rust or verdigris. He further ascertained, that solid metallic bodies produce analogous effects, but in a much feebler degree than the numerous acuminated points of the bundle consisting of metallic wires. The nature of the metal, he adds, seems to cause no difference; for brushes of iron wire produce the anticipated alleviation in as great a degree as those of copper wire. If he could trust his observations, however, he thinks that he perceived a greater degree of anodyne virtue in copper, iron, and gold, than in other metals.

Admitting that the effect is constant,—to explain the theory of its production, Professor Hildenbrand does not hesitate to deduce it from the laws of electricity. The original nature of metallic bodies, which are remarkably good conductors of electricity; the rapid action of the brush if the aching spot has been previously moistened by the saline solution; the remarkable tendency of pointed bodies in attracting electricity; and the sense of an emanation, and an agreeable coolness, combined with manifest alleviation of pain admitted by the patients, he regards as no trifling arguments to infer, in the disordered and aching nerves, a certain degree of *electric plethora*, or accumulation of animal electricity, which may be discharged by the application of a suitable conductor. This hypothesis, he lastly remarks, would accurately correspond with the notions delivered in his elements on the accumulation of the imponderable Biotic principle in various parts of the nervous system, as the proximate cause of nervous disorders which attack in paroxysms, and are dissipated by what he denominates autocratic explosions.

We have given the foregoing statements without comment or remark, because they proceed from a physician of acknowledged judgment and observation. Taken by themselves, the facts, if facts they are, are extraordinary, and would lead us to believe that there was something more than fancy and mummery in the magnetic tractors of Mesmer. On a former occasion we adverted to the implicit confidence which Laennec reposed in the use of electric or electro-magnetic plates on the breast and back in *angina pectoris*, and similar neuralgic affections of the chest; and were disposed not only to doubt its alleged efficacy, but to regard it as mere influence of imagination. Both methods of treatment appear to be referable to the same principle, whatever that may be; and as both appear to be regarded as really efficacious by physicians, certainly not of second rate importance, we think that instead of being made the subject of ridicule, which is too often the case, and which can neither decide the matter of fact, or investigate the principle, they should be subjected to fair trial, and their actual merits truly determined.

In order to understand the theoretical views of Professor Hildenbrand, it is necessary to observe, that his father, Valentine Ernest Von Hildenbrand, whose doctrines he adopts, imagined that health consists in a process which he names *organico-dynamic*, as depending on the soundness of organs, and the harmony of function,—resulting from the perfect equilibrium of the gangliar system and the vascular system, which he termed the two factors, in imitation of the language of mathematicians; and that every form of disease consists in the greater or less subversion of this equipoise of the gangliar and vascular systems. The Biotic principle is simply the result of this equilibrium.

On Obviating Deformity after Burns. Two Lectures on the Primary and Secondary Treatment of Burns. By HENRY EARLE, F. R. S., &c. London, 1832.—Mr Earle is well known to have been the first surgeon who, in 1813, made successful attempts to remove the deformities occasioned by extensive burns. Most persons must have observed the unsightly and inconvenient contractions which take place after extensive burns of contiguous parts of the surface, and which occasionally draw down the chin, and face to the neck by a firm indurated web, draw the one side of the face, or mouth, awry, unite the head to the shoulder, the arm to the breast, or the forearm to the arm, and totally preventing the extension of these parts on each other.

The cause of this contraction is various; but in general it may be attributed to two concurrent causes. *First*, after the skin is destroyed, there is always a tendency to contraction and shrinking in the new and imperfect skin which is reproduced. *Secondly*, the granulations on which the new skin is deposited, undergo, after healing, a sort of shrinking contraction, absorption, or consolidation, by reason of which they occupy a much smaller space than during the process of granulation and suppuration. This process is, in ordinary circumstances, beneficial. But in extensive ulcers, occurring in the neighbourhood of the neck and in the flexures of the joints, it often causes the most distressing contractions and deformities.

"The force with which this gradual process acts is truly astonishing; as the repeated drop of water will, in time, undermine the firmest rock, so will this slow but powerful process effect the most extraordinary changes in the form. I have repeatedly known it draw down the chin upon the sternum; and approximate the shoulders, by the partial absorption of the clavicles, so as to alter the dimensions of the thorax. I have had many instances in which the fore-arm has been permanently bent upon the arm, so as to bring the thumb in contact with the point of the shoulder. In the course of last year, two remarkable instances occurred in this hospital, of which I have an opportunity of presenting you with very faithful drawings. In the one, not only is the whole head bound down towards the sternum, but actually the firm bone of the lower jaw has been curved downwards, so as only to admit of the last molar teeth coming in contact; the mouth being kept permanently open, and the direction of the incisor teeth being altered so as to cause them to project nearly in a horizontal line. In the other, the arm was pinioned to the side, and the hairy scalp was drawn many inches down the back between the scapulæ. At the present time there is a melancholy instance in the house, where the fingers and thumbs of both hands are drawn together in the palms, so as to render the extremities nearly useless."

The remote cause of this inconvenient contraction is in general carelessness during the process of cicatrization; and Mr Earle maintains, that, in a large proportion of cases, these results may be obviated by the well-directed efforts of art, assisted by machinery. In order to do so, an extremity, with an ulcerating surface over a joint, should be kept extended on a splint, not only during the process of healing, but long subsequent to perfect cicatrization; and in this case the cicatrized surface diminishes in a circular direction, drawing the healthy integument together laterally. This extension should be maintained night and day, with the exception of moving the joint passively at intervals, to maintain synovial secretion, and insure free use of the articulation.

After the mischief has been produced, however, and any two contiguous parts of the human body become united by one or more horny membranous webs, it becomes requisite,—not to make a transverse incision, as might be supposed,—but to remove the whole diseased cicatrix, and to approximate the sound integuments from the two sides of the arm, while the arm or other part is kept extended by a splint or other mechanical contrivance. It appears, that, notwithstanding the cautions of Mr Earle regarding the management during the cicatrization after extensive burns, various examples of contracted and indurated cicatrix take place; and every year cases are admitted into St Bartholomew's Hospital, requiring the total removal of the diseased cicatrix, and the healing of the new surface by the means now specified. Since the first case, which occurred at the Foundling Hospital in 1813,* Mr Earle has operated on more than twenty cases with success; and Mr Brodie, of St George's Hospital, Mr James, of Exeter, and Mr Hodgson, of Birmingham, have, in several cases, employed the same mode of operation and treatment, with equally beneficial results.

In the accomplishment of these objects, the surgeon will often have to exert all his ingenuity in devising means for retaining the parts in a state of extension, with as little inconvenience to the patient as possible. In one case, Mr Earle was under the necessity of employing a bandage of a particular construction to keep the head back, as it was impossible to apply pressure under the chin. The ordinary splint answers well with the elbow and ham; but at the groin and in the neck the contrivances require to be variously modified. Mr James, of Exeter, has constructed an ingenious apparatus for maintaining the head extended, after operations for relieving contractions of the neck; and the same mechanism Mr Earle has employed advantageously, not only in curing, but also in preventing such contractions. In short, the great principle is steady extension until the cicatrization is completed.

The question, at how remote a period from the receipt of the injury, the surgeon may expect to be successful, Mr Earle thinks must be answered by considering the situation of the burn, and the extent to which the muscles and bones are involved. In some instances, it appears, that after many years duration, a callous cicatrix may be removed, with the effect of restoring the motion of the part. The following case is of this description.

"A young lady, aged 17, applied to me for an affection of her spine: during my attendance, I observed that her right hand was much deformed, in consequence of very firm cicatrices which bound down her thumb and three fingers, so as to greatly interfere with the use of the hand. She had been burnt when quite an infant, and the defect had existed for nearly 16 years, growing with her growth. From this history it was to be apprehended that the tendons and muscles would afford a serious obstacle to any improvement. I proposed, however, to make a trial with only one finger, and explained my views to the lady and her friends. She cheerfully acquiesced, as she was very desirous of being able to reach an octave on the piano-forte, being very fond of music. I succeeded so perfectly with the first finger that I proceeded with the others, and the thumb; and, eventually, restored the hand, and enabled my patient to attain the object of her ambition."

In performing operations for the removal of contractions, Mr Earle thinks it preferable to remove the contracted cicatrix entirely. In some cases, where a portion had been left at one extremity, with the view of saving time, by a smaller extent to be cicatrized, the detached cicatrix has sloughed, and no time has been saved. The extension should be gradual and steady; and though it appears to be small at first, eventually, by perseverance, the joint becomes extended, and the patient recovers the use of his limb.

In some instances, it appears that the contraction, if slight and not indurated and web-like, may be removed by mechanical means alone without operation; and this method, first employed by Mr Hodgson, Mr Earle has adopted successfully in two instances.

MISCELLANEOUS.

Graduates of the University of Edinburgh. (*Medical Gazette,* No.

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* On Contractions after Burns or Extensive Ulcerations. By Henry Earle, Esq. Med. Chirurg. Trans. Lond. 1814, Vol. v, p. 96.

xi. Feb. 16, 1833. (272) p. 662.)—We rarely take the liberty of animadverting on any of the statements or opinions of our contemporaries; and generally leave the public and profession to decide on the validity of their assertions, and the soundness of their views. From this neutral course, however, we feel it our duty at present to depart, in order to rectify what we regard as a misrepresentation, unintentional, doubtless, but nevertheless injurious to the character of the Graduates of the University of Edinburgh.

Every one knows the discussions which have been lately going on about the right which the fellows of the London College conceive themselves to possess, in excluding from the fellowship all those graduates not educated in Oxford or Cambridge. With that we have at present nothing to do. But in the course of the arguments which have been recently brought forward, on the reasons of the inadmissiblity of the Scottish graduates, there is in the article of the Gazette above quoted, a passage which certainly conveys the idea, that a physician may graduate at Edinburgh without residence at a University, and without examination.

"It would not be difficult," it is said "to point out licentiates who have had no University education whatever,—who have come to London to take whatever chance or fortune might send them,—who have practised as surgeons, or apothecaries, or any thing; and who have either purchased their degree at Aberdeen, or (leaving their patients in the charge of a friend for a day or two,) have matriculated at Edinburgh; and by repeating the same process two or three times, have on the last occasion, come back from the North full grown *Doctors*, without ever having been missed from London."

Now, if this is equivalent to saying, that a physician may graduate at Edinburgh without University education, and without examination, we have respectfully but firmly to submit the following statements. What takes place at the other Scottish Universities we know not. But graduation at Edinburgh without examination, and that a most strict and sufficient one, has been at all times, since degrees were granted there, entirely out of the question; and this, which the author of that article ought to have known, is so certain, that we have no hesitation in asserting that not a single instance of an Edinburgh graduate made in this manner can be adduced.

The other point of graduation without residence at some reputable University, is equally out of the question. No individual, however certified, can be admitted for examination, unless he is either known to reside at the University of Edinburgh, and to have undergone the course of education there prescribed, or can produce most satisfactory evidence that he has resided during the prescribed time, and undergone the prescribed course of education, at some acknowledged University; for instance, Dublin, Glasgow, Aberdeen, Paris, Goettingen, &c. Even this latter alternative has been admitted only after very full and satisfactory proof; and the professors have always exercised it with a very scrupulous discretionary power. In general, they have been disposed to refuse examination to all and sundry who have not resided in Edinburgh, and pursued the course of academical study prescribed by the statutes of the University. For this scrupulous adherence to the letter, however, they were occasionally accused of illiberality and exclusive assumption; and on certain rare occasions, they have allowed gentlemen, who had been either wholly educated at other Universities, or had been partly educated there, and partly educated at Edinburgh, to submit to examination. In this manner, we have known a few candidates who have been two years at Glasgow, and spent the rest of their academical course in Edinburgh, or who had obtained their academical education in Dublin, or in Goettingen, or some other foreign University, admitted on unquestionable evidence of such academical education, to undergo the usual trials. One of the best examples of the kind was that of Dr Kilian, several years ago, who had received his academical education partly at Moscow, partly at Dorpat, and, we believe, partly at Berlin,—whose learning and medical knowledge unquestionably showed that he had been well educated, and whose subsequent writings are such that they are not likely in a hurry to be exceeded by any graduate of the same standing in Oxford or Cambridge. Dr Houston, of Dublin, was in like manner, and on the same principle, admitted to examination last summer; and we are so unfortunate as to think that Dr Houston, though educated in Trinity College, Dublin, has nevertheless, done more in the short time that he has belonged to the profession, than any single graduate of Oxford or Cambridge.

We specify these examples, to show that the rule of residence and education at some University are never dispensed with at Edinburgh; and that the admission to examination of gentlemen, educated at other Universities of which the professors have no personal knowledge, is only allowed on unquestionable evidence of such residence, and in the case of persons so well known, that deception would be impracticable. Nay, we must inform our friends in the South, that we have known the professors of the University of Edinburgh refuse the examination of those educated at Paris, on the ground that the claim of its medical school, excellent as it is to the character of a University, and to connection with the Parisian University, is doubtful.

We beg, therefore, respectfully to ask on what foundation rests the assertion, that gentlemen have been known to matriculate at the College of Edinburgh, and spend the time in London, and eventually have obtained a degree from Edinburgh; and we should like any instance of this kind to be named. Nothing can prevent gentlemen from matriculating at Edinburgh, and pretending to say they have received their academical education at that University, while in truth they are absent or present in some other place. But that they could obtain a degree from Edinburgh under those circumstances, is a physical as well as a statutory impossibility. Such individuals may have obtained degrees from Aberdeen or St. Andrew's; but from Edinburgh the thing was utterly impracticable.

We know that it was asserted some ten or eleven years ago, that some individual or individuals in London attempted this mode of procedure. But that he did not then succeed we have good reason to know; and that no one can succeed since that time is equally certain. The necessary monthly subscriptions, and the close surveillance of the teachers, is perfectly sufficient to enforce residence and attendance; and as for the rest, that may be most safely left to the certainty and the severity of the examination. In short, there never was any such thing in Edinburgh, as admission to degrees without examination; and no admission to examination ever was permitted without academical residence.

So much for an erroneous representation, calculated certainly to injure the character of the Edinburgh graduate. We add a few words on what may be matter of opinion.

We observe that our contemporary insists much on the advantage which the graduates of Oxford and Cambridge possess over the Scottish graduates in general, and the Edinburgh ones in particular, in the matter of preliminary academical education, and maintains, that, in order to place the latter on a footing with the former, such a course of literary education ought to be prescribed and enforced by academical statute, as might remove this alleged inequality. To this we have no objection in the world; and though we say it with humility, we have some small hopes that the average of the Scottish Edinburgh graduates, at least, would bear comparison in this respect, even with the average *alumni* of the far-famed English establishments. It is a most weak mistake to imagine, that, because preliminary academical education is not prescribed by the statutes regarding medical degrees, it is not taken. The members of the medical faculty understand that every candidate has obtained the literary education of a gentleman; and this they know comprehends the usual acquaintance with the Greek and Roman Classics; a course of mathematical instruction; and the elements of natural philosophy, with ethics or metaphysics, as may be the individual tendency. This they have not thought it proper to prescribe, no more than they thought of prescribing a course of dancing, fencing, or gymnastics. But they presume that it is obtained; and, in point of fact, a course of education still more extensive is obtained by many of the Edinburgh Scottish graduates. It is no doubt true that these gentlemen do not care to make a great display of these scholar-like attainments, for two reasons. In the *first* place, medicine is a profession of such extent and difficulty, that it requires all their diligence, most of their energies, and the largest share of their time to do it justice; and *secondly*, they know that the most accurate knowledge of the arrangement of Anapests, and double Dochmiacs, or of the methods of ascertaining the equation of the Catenarian curve, could not enable them to ascertain the presence of a hypertrophied ventricle, a diseased liver or kidney, or a morbid state of the brain, or to say what remedy or remedies might alleviate the sufferings of the patient. They, therefore, under the influence of irresistible necessity, cultivate general literature and science, rather in a subordinate manner to medicine, much on the principle that Sir William Jones found it impossible to amalgamate the study of law and literature. Our friends in the South may be further gratified to know, that the Edinburgh professors agree to remit one year of medical study, to those who have taken the degree of A. M. It must appear rather extraordinary, after these statements, to hear of the Edinburgh University granting degrees without examination.

On one other topic we have just a single remark to offer. It is said in the passage referred to, that many graduates so made have practised as surgeons or apothecaries. The latter class we willingly give up to the tender mercies of the College of Physicians, and give them leave to pound and triturate them in any mode that seems most effectual. But, as for surgeons becoming physicians, we confess we are so unhappy as to think it would be good for physic and not bad for patients, if most physicians were made in this way. We do not mean to assert that the same individuals should continue to practise physic and surgery in large and populous towns, where division of labour is always practicable and always best. But when we see and have the best reason to know, that such men as Cooper, Travers, Brodie, and Lawrence, not to mention the late Mr Abernethy, really and truly practise more as physicians than as surgeons,—out of their hospitals, when we know that the public service now recognizes the practicability and convenience of allowing those who entered as surgeons to act as physicians,—we can recognize nothing but a nominal distinction. Nature recognizes none except the external and internal, the accessible and inaccessible situation of the morbid action. But if more evidence on this point were wanting, we have only to refer to the fact, that many eminent physicians, both in this country, and abroad, were educated as surgeons. Perhaps on this subject, however, we may refer our friends to Dr Latham of St Bartholemew's Hospital, who, in a clinical lecture in the 18th No. 2d February 1833, of the same work, in which the objection now mentioned is urged, expresses, in most decided terms, the same sentiment.

Harveian Society Prize Essay.—At the annual Business Meeting of the Harveian Society of Edinburgh, held this day, it was decided, that the Prize given by the Society should be awarded to the Author of an Essay on the subject advertised last year, viz. "*An Experimental Essay on the Curative properties of Strychnia,*" having the following Motto, "Opinionum commenta delet dies, naturæ judicia confirmat," *Cic. de Nat. Deor.*; and on opening the corresponding sealed letter, it was found that Mr James Marr was the Author; consequently Mr Marr was declared the successful Competitor.

The Harveian Society has fixed on the following subject for the Prize Essay for the year 1834, viz.—"*The Changes which the Blood undergoes in Inflammation.*"

Dissertations on this subject must be transmitted to either of the Secretaries, on or before the 1st day January 1834. Each dissertation must be accompanied by a sealed letter, containing the name and address of the author, and inscribed on the back with a motto. The same motto must also be prefixed to the dissertation to which the letter belongs.

The prize given by the society to the successful candidate, is either a Copy of the Quarto edition of Dr Harvey's Works, published by the College of Physicians of London; or a silver medal, with a suitable inscription, at the option of the candidate. The prize is presented to the successful candidate at the annual festival in April.

The candidate is at liberty to employ his dissertation afterwards, in any way he may think proper: And accordingly, some dissertations, presented to the Harvein Society, have in consequence of publication, been productive of considerable honour and emolument to the authors.—By the order of the Society.

William Moncreiff, M. D., 7, York Place, } *Secretaries.*
Richard Huie, M. D., 8, George Square, }

Glasgow Mortality Bill, for the year 1832, *being the Twelfth Annual Bill drawn up under the authority of the Lord Provost and Magistrates, containing a General List of the Registration of Baptisms, Proclamation of Marriages, and Registration of Burials, within the Ten Parishes of the City of Glasgow, and the Suburb Parishes of Barony and Gorbals, from* 15*th December* 1831, *to* 14*th December* 1832, *both days inclusive.*

Baptisms Engrossed in the Public Registers.

	Males.	Females.	Total.
In the City, -	973	747	1720
Barony, -	428	400	828
Gorbals, -	439	400	839
Births, Society of Friends,	0	1	1
Total,	1840	1548	3388

Included in the above are one triple (two males and one female in Anderston,) and seventeen twin births. Unregistered, one triple, (two males and one female in Tradeston.) The mother, Mrs Duncan, who is the wife of a journeyman carpenter, nurses the whole. The former triple are the children of a labourer. The six are about five months old, and are all doing well.

Proclamations of Marriages engrossed in the Public Registers.

In the City, -	810
Barony, -	791
Gorbals, -	378
Total,	1979

Burials engrossed in the Registers of the City and Suburbs Burying Grounds.

	Males.	Females.	Total.
January,	410	414	824
February,	436	438	874
March,	490	465	955
April,	430	386	816
May,	365	312	677
June,	377	406	783
July,	491	499	990
August,	827	928	1755
September,	354	395	749
October,	369	386	755
November,	297	232	529
December,	297	274	571
Total,	5143	5135	10278

Of whom have died.

		Males.	Females.	Total.
Still-born,		332	292	624
Under 1 year		734	592	1326
1 and under	2	540	433	973
2	5	516	478	994
5	10	213	212	425
10	20	211	222	433
20	30	380	489	869
30	40	474	505	979
40	50	504	533	1037
50	60	437	476	913
60	70	378	449	827
70	75	168	208	376
75	80	141	122	263
80	85	62	79	141
85	90	41	27	68
90	95	10	15	25
95	100	2	0	2
	100	0	2	2
	103	0	1	1
Total,		5143	5135	10278

The three persons, 100 years and upwards, were *all paupers*. Widow M'Gask was born in the county of Donegal; she had just completed her 109th year at her death. Rosina M'Arthur, a Scotch woman, was 100 years and 3 months at her death. Martha Scott was a native of Glasgow; she wanted only a few days of 103 years at her death. The ages of these persons were certified by the proper authorities.

Abstract of the Number of Burials.

In the City of Glasgow.

In the High Churchyards, and in St Mungo's Burying Ground,	2946	
In do. from the Royal Infirmary,	228	
In do. inmates or paupers, buried at the expense of the Town's Hospital,	704	
In Blackadder's Aisle,	3	
In the Crypt of the Cathedral,	4	
		3885

In the Blackfriar's, St David's, and the North-West Burying Grounds,	360	
In the Crypt of St David's Church,	16	
		376
Episcopal Chapel Burying Ground,		14
Total burials within the Royalty,		4275

In the Barony Parish.

In Merchants' House Cemetery—in the Jew's Burying Ground,	1	
In Calton Burying Ground,	1677	
In Bridgeton do.	483	
In Tollcross do.	282	
In Shettleston do.	83	
In Maryhill do.	72	
In Anderston, Old do.	157	
In Cheapside Street do.	200	
In Woodside Road do.		
In Crypt of the Rev. Dr Mitchell's Church, Wellington-st.	61	
In Society of Friends' Burying Ground,	2	
Total burials in the Barony Parish,		3633
In Gorbals Burying Ground,		2370
Total burials in city and suburbs,		10278
Ditto, Ditto, in 1831,		6547
Increase of burials this year,		3731

Detailed as Follow:

In High Churchyards, and St Mungo's Burying Ground,	1389	
In do. from Royal Infirmary,	22	
In do. from Town's Hospital,	120	
In Blackadder's Aisle,	1	
		1532
In Blackfriars', St David's, and North West,		74
In Episcopal Chapel Burying Ground,		3
In Calton do.		617
In Bridgeton do.		180
In Tollcross do.		92
In Shettleston do.		59
In Maryhill do.		28
In Anderston, Old do.		13
In Cheapside Street do.		59
In Woodside Road do.		225
In Society of Friends' do.		1
In Gorbals do.		852
		3735

From which deduct Decrease.

In Crypt of Cathedral,	1	
In Crypt of St David's,	1	
In Jews' Burying Ground,	1	
In Crypt of Dr Mitchell's Church,	1	
		4
Increase of burials in 1832,		3731

Number of burials in Glasgow, and in the suburb Parishes of Barony and Gorbals, during 12 years, viz:—1821, 3686—1822, 3690—1823, 4627—1824, 4670—1825, 4898—1826, 4538—1827, 5136—1828, 5942—1829, 5452—1830, 5185—1831, 6547—1832, 10,278.

JAMES CLELAND.

Council Chambers,
28th December 1832.

Conspectus of Cholera in Glasgow, being a Table of Weekly Cholera Cases occurring in the whole District, (Population 202,426;) viz. Royalty, all the Townships of Barony Parish, and whole Barony of Gorbals; formerly Reported separately, now combined into one Enumeration. Prepared by JAMES CLELAND, LL. D., Member of the Board of Health, author of Statistical Works relative to the City of Glasgow and County of Lanark; and by JAMES CORKINDALE, M. D., LL. B., Medical Secretary to the Board of Health.

The daily Reports published previous to the 1st of May comprehended the cases in the Royalty, Calton and Bridgeton, Anderston, Springbank, and Woodside; because the expense of the treatment of Cholera in all these places was drawn chiefly from the Subscription Fund of the Glasgow Board. The cases at Maryhill, Finnieston, and Shettleston districts, were reported to the London Board directly. After the 1st of May, when Independent Assessment Boards were formed, separate Reports were published for the whole Barony Parish, both town and landward; while the Glasgow Reports were then confined to the Royalty, and Barony of Gorbals.

In this weekly enumeration, all these separate Reports are collated, and a whole formed; each new case, death, and recovery, wherever occurring, is put down in its proper day, as if a uniform series of Reports, for the whole population district, had been daily continued from the 12th of May to the 11th of November.

The week terminates on the Sunday evening, because the first Report was issued on Monday the 13th of February.

1832. Month.	Day.	Remain. last Report.	New Cases.	Deaths.	Recoveries.	Remaining.
Feb.	19	——	62	21	25	16
	26	16	113	46	44	39
March,	4	39	68	39	44	24
	11	24	85	60	30	19
	18	19	94	50	30	33
	25	33	150	61	56	66
April,	1	66	138	74	91	39
	8	39	112	57	49	45
	15	45	99	50	53	41
	22	41	120	60	64	37
	29	37	71	40	42	26
May,	6	26	71	39	20	38
	13	38	73	39	31	41
	20	41	41	31	32	19
	27	19	21	11	17	12
June,	3	12	6	7	10	1
	10	1	45	17	10	19
	17	19	72	39	31	21
	24	21	168	70	55	64
July,	1	64	127	72	66	53
	8	53	131	62	62	60
	15	60	143	68	76	59
	22	59	229	101	100	87

July,	29	87	218	113	93	99
August,	5	99	817	356	257	303
	12	303	699	339	447	216
	19	216	483	228	292	179
	26	179	419	178	259	161
Sept.	2	161	231	122	187	83
	9	83	117	50	104	46
	16	46	60	31	47	28
	23	28	84	33	44	35
	30	35	165	90	54	56
October,	7	56	310	140	106	120
	14	120	173	95	117	81
	21	81	95	58	62	56
	28	56	47	29	50	24
Nov.	4	24	41	18	30	17
	11	17.	10	11	16	0
			6208	3005	3203	

Since the annexed enumeration closed, a few cases have been reported. Not one, however, as far as is known, has occurred since 3d December. The epidemic, therefore, has prevailed among us for 39 weeks, or 9 calendar months; and has attacked 6208 persons. It is probable that this number is very near the truth; for though, no doubt, many cases were concealed, others, not real cholera, were unavoidably included in the reports; so that the deficiency and excess may, perhaps, nearly balance each other. Moreover, the deaths do not vary a great deal from the number of burials returned by the churchyard wardens, as hereafter narrated.

From inspection it will be seen that there have been three eruptions of cholera, marked by the reduced number of cases happening about the 3d of June, the 16th of September, and the 11th of November. Each eruption had a period of increase, and also of gradual decrease. In the first eruption, persons poorly fed, of irregular habits, and dwelling in the crowded ill-aired parts of the city, were chiefly affected. The second eruption was more severe; the attacks were more spread over the town, and many healthy persons, and in easy circumstances, fell victims to the disease. The last eruption was milder than the second, but still surpassed the first, both in number of cases, and in the healthy and good condition of many of the sufferers.

The total number of cases, 6208, is one for every 32⅝ of the population.

The total number of deaths, 3005, is one for every 67⅜ of the population.

The progress of the disease has been such, as to have seized one victim for every *six*, and to have occasioned one death for every *thirteen*, families.

Had the epidemic completed the year, and gone on for other three months with the average of its former course, it would have cut off 3756 persons; that is, one out of every 54 of the population, a rate equal to the mortality which in many places happens annually from all diseases.

The following Table exhibits the age and sex of those who died of cholera, and were buried in the burying grounds of the city and suburbs.—The difference in the total amount of burials in the following table, as compared with the preceding enumeration from the books of the Board of Health, may have arisen from the entire deaths not being communicated to the Board, or from an erroneous report of the disease which caused death, being furnished to the churchyard wardens. This was not unlikely to happen, from the alarm into which all persons were thrown who were in any way connected with such interments, particularly in the early stage of the epidemic, or what is very probable, a number of persons who died of cholera without the boundaries embraced by the Board of Health were interred in the burying grounds in the Board of Health districts.

Table, showing the Age, Sex, and Number of Persons who died of Cholera and Buried in the Burying Grounds of the City, and Suburb Parishes of Barony and Gorbals.

		Males.	Females.	Total.
Under 1 year,		10	8	18
1 and under 2		15	14	29
2	5	40	43	83
5	10	50	56	106
10	20	61	71	132
20	30	136	222	358
30	40	235	294	529
40	50	284	355	639
50	60	263	293	556
60	70	207	237	444
70	75	64	91	155
75	80	25	37	62
80	85	20	24	44
85	90	9	2	11
Total,		1419	1747	3166

Interred in the City.

In High Church Yards, and in St Mungo's Burying Ground,	1478
In Blackfriars', St David's, and North West Burying Grounds,	103
In Crypt of St David's Church,	1
In Episcopal Chapel Burying Ground,	4
Total within the Royalty,	1586

Interred in the Barony Parish.

In Calton Burying Ground,	542	
In Bridgeton Do.	42	
In Tolcross Do.	61	
In Shettleston Do.	52	
In Maryhill Do.	33	
In Anderston, Old Do.	27	
In Cheapside Street Do.	30	
In Woodside Road Do., North and South,	191	
In Crypt of the Rev. Dr Mitchell's Church, Wellington Street,	12	
In Society of Friends' Burying Ground,	1	
Total in the Barony Parish,		991
In Gorbals Burying Ground,		589
Total,		3166

Table exhibiting the Amount of Deaths by Cholera and Buried Monthly.

	Deaths from the Books of the Board of Health.	Burials from the Books of the Churchyard Wardens.
February,	86	87
March,	256	264
April,	220	229
May,	119	125
June,	191	196
July,	435	441
August,	1113	1222
September,	234	243
October,	328	334
November,	23	25
	3005	3166

It was desirable, in a medical and statistical point of view, to ascertain the number of burials during the existence of the cholera, namely, from 12th February to 11th November, 1832, as compared with the corresponding period in the preceding year, and the following is the result:—

Burials from 12th Feb. to 11th Nov., 1832, including persons who died of cholera, - -	8124
Deduct those who died of cholera, and buried in the burying grounds in the city and suburbs, - -	3166
	4958
Burials from 12th Feb. to 11th Nov. 1831, -	4862
Increase of burials during the above period, after deducting deaths by cholera, - - -	96

It is very fortunate, in a statistical point of view, that the pestilence did not visit this city last year, when the Government census was taken, otherwise the data for ten years would have been rendered more indistinct, and less suitable for the formation of annuity tables, and tables exhibiting the probability of human life in large towns—and although the Mortality Bill for this year, from the unprecedented number of deaths, and the usual deficiency in the registration of baptisms, cannot be used for these purposes, it is less to be regretted, as from the data of 1831, which included the Government Census, copious folio tables, containing the requisite information, have been published.

During the first eruption, a voluntary subscription for the prevention or cure of cholera and fever was entered into; and about the time of the second eruption, an assessment was laid on the inhabitants for cholera alone. These two amounted to about L. 14,000, exclusive of assessments in the Barony and Gorbals parishes.

Fever.—Fever has been prevalent here during a considerable part of the last two years, but is now greatly abated. On the 26th November 1831, there were in the Royal Infirmary 213 cases. In the Infirmary and temporary Fever Hospital at Mile-end, on 25th February 1832, 286 cases; a larger number than had ever been in the hospitals of this city. On 15th December 1832, the fever cases in the Infirmary (the Mile-end Hospital being shut up) were only 54; a lower number than has been on any day during the last two years.

Glasgow, 28th Dec. 1832.

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END OF VOLUME THIRTY-NINTH.

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